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FM 10-5

AUTHORITY HISTORICAL FILE

WAR DEPARTMENT

QUARTERMASTER FIELD MANUAL

QUARTERMASTER OPERATIONS

March 10, 1941

AUTHORITY HISTORICAL FILE

QUARTERMASTER FIELD MANUAL

QUARTERMASTER OPERATIONS

CHANGES No. 1

WAR DEPARTMENT,
WASHINGTON, July 16, 1941.

FM 10–5, March 10, 1941, is changed as follows:

■ 112. DEFINITIONS.

* * * * * * *

b. Call.—A call is a demand for the delivery of supplies under the terms of a credit.

* * * * * * *

[A. G. 062.11 (6–7–41).] (C 1, July 16, 1941.)

■ 115. QUARTERMASTER REGIMENT, INFANTRY DIVISION (SQUARE).

* * * * * * *

c. Service company (Company S).—The principal functions of the service company are to handle and care for the loads of the trucks and trains and to furnish personnel for handling quartermaster supplies at division supply points. It also forms the nucleus of the division labor pool. This company usually moves with the truck battalions and bivouacs in the vicinity of the railhead.

* * * * * * *

[A. G. 062.11 (6–7–41).] (C 1, July 16, 1941.)

■ 116. DIVISION QUARTERMASTER'S OFFICE.

* * * * * *

b. Supply division.

* * * * * *

(4) Rescinded.

* * * * * * *

[A. G. 062.11 (6–7–41).] (C 1, July 16, 1941.)

■ 117. QUARTERMASTER BATTALION, INFANTRY DIVISION (TRIANGULAR).—This battalion consists * * * division headquarters staff. The service platoon furnishes the labor for handling supplies and is the nucleus for the division labor pool.

The maintenance platoon furnishes * * * forms the nucleus of the division motor pool.

* * * * * * *

[A. G. 062.11 (6-7-41).] (C 1, July 16, 1941.)

■ 118. QUARTERMASTER OPERATIONS, INFANTRY DIVISION (SQUARE).

* * * * * * *

i. Division reserve.

* * * * * * *

(1) Each kitchen can usually carry one "A," "B," or "C" ration. As a general rule, the ration cycle * * * with breakfast the next day.

* * * * * * *

k. Kitchens.—The meals are prepared at the bivouacs of the kitchens, grouped by regiments (or battalions), and immediately after dark, trucks are dispatched to locations from which the food can be carried to the front lines.

* * * * * * *

r. Graves registration.—(1) In stabilized situations, graves registration and mortuary matters are functions of the division quartermaster. The graves registration section of the division quartermaster's office is responsible for the location of cemeteries and the registration of graves therein. This section is responsible for proper sketches showing permanent landmarks and compilation of data necessary to locate the cemeteries. It is also responsible for identification and proper burial and keeps the number of single graves to a minimum. The inspection, collection, and disposition of personal effects of the dead are performed under supervision of this section. This section is also responsible for general supervision of all attached graves registration units. Their primary function is to perform clerical and supervisory work. The labor in connection with burial is performed either by labor from the service companies of quartermaster units or by the troops. In a rapidly moving situation a "team" composed of graves registration troops, labor units, medical service, and truck units, formed by Army or GHQ to follow up and do this work, may be located at each of the collecting stations and at the division clearing stations; that is, at points where the greatest number of dead are to be found. The graves registration unit, assisted by a

detachment from this team, makes a systematic search throughout the battlefield with particular attention to the unit first-aid stations. The transportation necessary for burial may be furnished by the motor units of the quartermaster corps.

* * * * * * *

[A. G. 062.11 (6–7–41).] (C 1, July 16, 1941.)

BY ORDER OF THE SECRETARY OF WAR:

G. C. MARSHALL,
Chief of Staff.

OFFICIAL:

E. S. ADAMS,
Major General,
The Adjutant General.

U. S. GOVERNMENT PRINTING OFFICE: 1941

FM 10–5

QUARTERMASTER FIELD MANUAL

QUARTERMASTER OPERATIONS

ALDEN C. REYNOLDS
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INDIAN ORCHARD, MASS.

Prepared under direction of
The Quartermaster General

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WAR DEPARTMENT,
WASHINGTON, *March 10, 1941.*

FM 10–5, Quartermaster Field Manual, Quartermaster Operations, is published for the information and guidance of all concerned.

[A. G. 062.11 (11–29–40).]

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QUARTERMASTER FIELD MANUAL

QUARTERMASTER OPERATIONS

CHAPTER 1

GENERAL

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SECTION I

MISSION AND FUNCTIONS

■ 1. MISSION.—The mission of the Quartermaster Corps is to assure the successful operation of the Army of the United States by accomplishing efficiently and economically the general function of providing food, clothing, equipment, housing, transportation, and similar services assigned to the corps by law or regulation.

■ 2. FUNCTIONS.—*a.* Section IX of the National Defense Act, as amended, designates The Quartermaster General as the responsible head of the Quartermaster Corps (under authority of the Secretary of War) and in the zone of the interior charges him with—

(1) Purchase and procurement for the Army of all supplies of standard manufacture and of all supplies common to two or more arms or services, but not with the purchase or procurement of special or technical articles to be used or issued exclusively by other supply arms or services.

(2) Direction of all work pertaining to construction, maintenance, and repair of buildings, structures, and utilities other than fortifications connected with the Army.

(3) Storage and issue of supplies.

(4) Operation of utilities.

(5) Acquisition of all real estate and issue of licenses in connection with Government reservations.

(6) Transportation of the Army by land and water, including transportation of troops and supplies by mechanical or animal means.

(7) Furnishing means of transportation of all classes and kinds required by the Army.

(8) Such other duties not otherwise assigned by law as the Secretary of War may prescribe.

b. The Quartermaster General is not charged with responsibility for—

(1) Special and technical articles used or issued exclusively by other arms or services that may be purchased or procured with the approval of the Assistant Secretary of War, by the arms or services using or issuing such articles, and the chief of each arm or service that may be charged with the storage and issue of property pertaining thereto.

(2) Utilities pertaining exclusively to any arm or service of the Army which may be operated by such arms or services.

(3) Exceptions prescribed under special wartime procedure announced by competent authority.

c. Revised Statutes 1141 operates to make it the specific duty of the Quartermaster Corps to purchase and issue to the Army such supplies as enter into the composition of the ration.

d. AR 30–5 provides that The Quartermaster General—

(1) Is the traffic manager for the War Department and exercises jurisdiction over all transportation activities in the Army.

(2) Has charge of certain national cemeteries, national monuments, and national parks and the records pertaining thereto.

(3) Transports all property turned over to him by officers or agents of any Government survey for the National Museum or for the civil or naval departments of the Government in Washington, or elsewhere, under the regulations governing the transportation of Army supplies.

e. Necessarily, all of the above functions were stated originally in general terms, and most of them subsequently have been the subject of numerous interpretations or exceptions. Their current status and the details of administration and procedure involved must be sought in current War Department directives such as Army Regulations, Field and Technical Manuals, Circulars, and Mobilization Regulations.

SECTION II

RELATION OF QUARTERMASTER CORPS TO OTHER AGENCIES

■ 3. GENERAL.—The general functions of quartering, clothing, equipping, feeding, and transporting the Army bring the Quartermaster Corps into close relationship with practically every agency in the Army including the arms, services, office of the Assistant Secretary of War, the general staff, and the special staff.

■ 4. ARMS AND SERVICES.—Quartermaster supplies cover a wide range of commodities and include everything required by the Army except certain special supplies which are assigned to other services for procurement, storage, and issue. They include subsistence, forage, fuel, clothing, equipage, animals, animal-drawn vehicles, harness and saddlery, motor vehicles and accessories, supplies for boats and transports, building materials, hardware, machine and hand tools, machinery of all kinds, electrical supplies and equipment, stationery and office supplies, and such other supplies of a miscellaneous nature as may be required by the Army. In supplying the needs of the arms and services, the Quartermaster Corps is concerned with their requirements which it receives from the War Department General Staff. In the determination of the types, classification, and standardization of these requirements, coordination is accomplished through the activities of the various technical committees of the Quartermaster Corps which have included in their membership representatives of all interested arms and services.

■ 5. THE GENERAL AND SPECIAL STAFFS AND ASSISTANT SECRETARY OF WAR.—*a. In zone of the interior.*—(1) The War Department General Staff through cooperation, coordination, and consultation with the technical committees and the arms and services determines the requirements of supplies and services charged to the Quartermaster Corps and where and when they will be needed. With this information, the Quartermaster Corps, under the supervision of the Assistant Secretary of War, determines how and where they will be procured.

(2) The G–4 division of the War Department General Staff is the one with which the Quartermaster Corps is most closely associated. This division is concerned with plans relating to

the supply of the Army. It makes these plans in sufficient detail so that supply arms and services will be able to do their work with full knowledge of changing military needs. It is charged with making plans and policies relating to the distribution, storage, and issue of supplies, transportation, and equipment. The relationship of the Quartermaster Corps with the G–4 division insofar as mobilization is concerned is generally confined to a study of transportation, construction, storage, and requirements of supplies necessary for mobilization.

(3) Briefly stated, as far as the Quartermaster Corps is concerned, the War Department General Staff determines the basis for requirements; The Quartermaster General computes the requirements under the supervision of the General Staff, makes procurement under the supervision of the Assistant Secretary of War, and distributes and issues under supervision of the general staff. The chart below indicates the re-

Relationship of Quartermaster General, Assistant Secretary of War, and War Department General Staff

Activities pertaining to Office of the Quartermaster General	Coordinated and supervised by the Assistant Secretary of War	Coordinated and supervised by War Department General Staff
Supply, including remounts and means of transport.	Procurement	*a.* Requirements. *b.* Storage and distribution.
Operation of supply installations, zone of the interior.	*a.* Procurement offices. *b.* Manufacturing depots.	Stockages in all depots.
Transportation, rail and water.	Establishes priorities as to movement of raw material, component parts, etc.	Establishes general priorities and priorities as to movements of troops and supplies.
Construction in zone of the interior.	Procurement of building material.	*a.* Requirements. *b.* Execution of building program.
Quartermaster Corps personnel and units.	Personnel for procurement and manufacture.	The Quartermaster General is mobilization advisor to War Department and develops tactics and technique of Quartermaster Corps troops.
Ports of embarkation		Establishes priorities and controls movements.

lationship of The Quartermaster General to the Assistant Secretary of War and the War Department General Staff.

b. In theater of operations.—(1) One of the principal responsibilities of the commander of a theater of operations is the organization and administration of a system of supply for the maintenance of all the forces which form his command. Control over the system of supply is centralized at headquarters, theater of operations, but supply operations are conducted under the supervision of subordinate commanders. The commander of the theater formulates the general plan for organization and administration of the system of supply and promulgates it in the form of general or specific directives to the operating agencies. In formulating his general plans, the commander of the theater of operations is assisted by his general staff and his special staff which includes his chiefs of supply services.

(*a*) The quartermaster, theater of operations, is the principal officer of the Quartermaster Corps on the staff of the commander of the theater of operations. He is responsible to the commander of the theater for the efficiency of the entire quartermaster system of supply and transportation. He carries out this responsibility by keeping the commander of the theater (and the general and special staffs) informed at all times of the capabilities of the Quartermaster Corps in the theater; by preparing plans and programs for Quartermaster Corps operations, which when approved by the commander of the theater and embodied in orders or instructions through the usual channels of command, become directives to subordinate commanders; and by constant supervision of all quartermaster activities in the theater through inspections, systems of routine and special reports, and close liaison with the quartermasters of subordinate commands such as the quartermaster of the communications zone, army quartermasters, and the quartermaster supply officers at regulating stations.

(*b*) The parts of the general plan on which the quartermaster, theater of operations, will be required to submit recommendations or plans are those which relate principally to the following:

1. Procurement, storage, and distribution of quartermaster supplies, including animals and means of transportation.

2. Acquisition of real estate and facilities and disposal of them after they have served their purpose.
3. Procurement and operation of quartermaster utilities including quartermaster storage, maintenance, and repair facilities.
4. Establishment and operation of the graves registration service.
5. Establishment and operation of the salvage service.
6. Transportation of troops and supplies by land and water except such as may be allocated to another service.
7. Regulations for operation, maintenance, and inspection of motor and animal transportation.

(2) *Special staffs.*—(*a*) In divisions and higher units, a quartermaster staff officer is a member of the commander's special staff which includes the heads of the technical, supply, and administrative services and certain technical specialists. As a special staff officer, the quartermaster supervises the quartermaster activities throughout the command and in most instances also commands his quartermaster unit and attachments. These two functions of staff and command although vested in a single individual are separate and distinct in that each involves different responsibilities and duties, and the exercise of one should not be confused or permitted to interfere with the exercise of the other. This dual function of certain officers has many advantages in facilitating the proper discharge of both staff and command duties of the officers concerned. His prescribed duties and responsibilities are—

1. Adviser to the commander and staff on quartermaster matters.
2. Determination of requirements, procurement, storage, and distribution of quartermaster equipment and supplies, including vehicles.
3. Procurement and disposition of real estate and facilities, including leasing.
4. Procurement and operation of quartermaster utilities, storage, maintenance, and repair facilities.
5. Operation of remount service; general service pool of labor; salvage service; graves registration service; motor transport service and motor maintenance units.

6. Transportation of troops and supplies by land, water, and commercial air means, except such as may be allocated to another arm or service.
7. Technical inspection of motor and animal transportation and supervision of quartermaster activities in subordinate units within limits prescribed by the commander.
8. Examination of captured quartermaster equipment.

(*b*) The quartermaster is given a mission in the form of approved plans and administrative orders. Within the scope of these plans and orders and within the limits of the resources at his disposal, he has complete initiative in insuring the best possible performance of his mission. Matters concerning routine and technical details are usually handled through personal conference or correspondence with the quartermaster staff officers of the next higher or lower echelons. All other instructions must be issued through the proper command channels. Each unit quartermaster is concerned that his superiors are fully informed, through proper channels, of the situation of his unit.

(c) Cooperation within the special staff is necessary to proper staff team play, and staff team play is necessary to successful execution of the commander's plans, including the quartermaster plan. The use of tact and the maintenance of cordial relations between special staff officers promotes cooperation.

(*d*) A quartermaster's relations with quartermasters and supply officers of subordinate units are those of a special staff officer of the higher unit commander. He, in no sense whatever, exercises his command function in such dealings.

c. Peacetime relationship.—In peacetime, the Quartermaster Corps relation to other agencies is similar to that in the zone of the interior in wartime. Much of the work is the same in peace as in war. Differences or variations between peacetime and wartime operating policies are indicated throughout this manual.

CHAPTER 2

SUPPLY

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SECTION I

GENERAL

■ 6. FUNDAMENTAL PROCEDURES.—Fundamental procedures of supply are carefully calculated rules of action designed to carry out, in the most expeditious and efficient manner, the functions which are a part of the supply mission of the Quartermaster Corps. Certain of these rules as outlined below apply to any type of supply mission.

a. Troops should not be burdened with a greater quantity of supplies than is necessary to insure their well-being, their proper training, or their readiness for action.

b. Combat troops should not have their attention diverted by supply details from their training for or engagement in their fundamental mission, which is to defeat the enemy.

c. Supply systems should have continuity, flexibility, elasticity, mobility, and simplicity.

d. The impetus of supply should be from the rear toward the point of consumption.

■ 7. APPLICATION.—*a. General.*—(1) The fundamentals of supply are applicable under all conditions of operation, but the degree of application for any one rule will vary according to the needs of the particular situation.

(2) The greatest limit of variation under which these fundamentals are applied is that between the operating conditions of peace and war. Other variations are found between the zone of the interior and the theater of operations, and between the communications zone and the combat zone.

(3) In the interest of administrative and operating efficiency, supply is divided into various functions such as procurement, storage, accounting, distribution, issue, and salvage. All of these functions contribute to the application of the fundamentals of supply and taken together comprise the machinery with which the supply mission is carried out.

(4) The rules listed in paragraph 6 are applied by means of planned arrangements of administration and operation and by physical mechanisms such as depots, dumps, railheads, and other supply installations. There is no clear-cut dividing line between the results obtained by the application of one fundamental, and the application of one will often bring another rule into operation. The entire supply mission is thus carried out by an interweaving and overlapping of applied fundamentals.

b. Continuity.—Continuity of supply is achieved by organization; first, promptly to secure the supplies and second, to maintain their flow from point of origin to point of consumption. To aid in maintaining this flow during periods of irregularity or interruption, reserves are created in various places, sizes, and types.

c. *Flexibility.*—A supply system must have the quality of flexibility in order to conform to the requirements of the tactical or strategical situation, thus leaving the commander full freedom of maneuver and unhampered by physical rigidity in his supply system. The rule of flexibility is applied by injecting into the supply system such arrangements as will permit it to adjust itself, without disruption, to unusual demands, changing situations, and sudden diversions of the flow into new and unusual channels. Practically, this quality is attained by decentralization of operation, efficient administrative control, and careful selection of locations for installations.

d. Elasticity.—This quality in a supply system requires that it possess such characteristics that it may expand, contract, or be distorted, and return to normal after such distortion without break-down or fatal loss of efficiency. Since there is no real "normal" in war, it is considered a normal situation when the campaign progresses according to plan and the supply system is based on that plan. The rule of elasticity is introduced when the supply system in operation is planned to meet not only that "normal" but also the entirely probable

and unforseeable expansion and contraction which may develop. This rule is applied by planning for the expansion and contraction of stock levels; for the expansion and contraction of the facilities for handling supplies; and for the manipulation of the supplies to conform to whatever tactical plan is put into operation.

e. Mobility.—Stored supplies are a potential asset. Until they are given movement, they are not a real asset to the consumer. The simplest form of mobility is that in which the individual carries on his person sufficient supply for his own needs for several days. The more the individual soldier is burdened with supplies the less mobile he becomes. The same is true of a supply system as a whole; that is, the more positive the supply, the less the tactical mobility. Hence, a compromise must be made in order to attain a reasonable certainty of supply combined with the necessary tactical mobility. This is done by carrying certain supplies, called "prescribed loads", in unit transportation, the designated limits in the size of the loads being the limits of compromise between surety of supply and mobility. In places other than the combat zone, mobility is achieved by proper echelonment, territorial distribution, regulation of size of storage places, location of stocks on or near good rail and road connections, and maintaining sufficient transport and labor to assure that supplies can be moved where and when needed.

f. Impetus.—Supply is a function of command and it is the duty of every commander to assure adequate supply for his command. The statement that the impetus of supply is from the rear implies that it is the duty of each higher commander to furnish supplies within reach of his subordinate commanders. In many cases, trains of subordinate units must go to the rear a certain distance to pick up their own supplies. The impetus, therefore, should come from the rear only insofar as subordinate commanders cannot assist themselves. It is still the duty of these subordinate commanders to assure supply for their units by all means at their disposal. To do this, every subordinate commander has the definite responsibility of keeping his next higher commander informed of his supply needs in sufficient time to permit furnishing these supplies by normal methods. The term "within reach" is relative and the definite distance

involved in any particular case depends upon the type and amount of transportation available, location and condition of the road and rail net, and other similar factors. A division commander adheres to this rule when he designates a distributing point a comparatively short distance behind the front line just as fully as he does when he requires the ammunition trains of the artillery to go to an ammunition supply point designated by him, which may be many miles to the rear.

SECTION II

PROCUREMENT

■ 8. RESPONSIBILITY.—The Quartermaster General is charged by statute with the procurement of all supplies of standard manufacture and all supplies common to two or more arms and services, with certain exceptions. He carries out this statutory responsibility through the procuring agencies outlined in paragraph 9.

■ 9. PROCURING AGENCIES.—*a. Manufacturing facilities.*—(1) The Jeffersonville Quartermaster Depot produces leather, metal, and wood products, tentage, and manufactured canvas articles and equipment.

(2) The Philadelphia Quartermaster Depot produces textile products such as various types of flags and breeches, trousers, and shirts.

(3) All orders for the manufacture of articles in these factories are placed through The Quartermaster General.

b. Procuring depots.—A large portion of quartermaster items are procured by contract from commercial sources. This type of procurement is effected by quartermaster depots and the quartermaster sections of general depots. In locating these depots, consideration is given to both procurement and distribution functions.

c. Post, camp, and station quartermasters.—For certain articles, local purchase by post, camp, and station quartermasters is authorized. (See par. 13*c*.)

d. Interdepartmental procurement.—Other governmental agencies are important in the procurement of supplies for the War Department. The principal agencies in this category are the Procurement Division of the Treasury Department, the Navy Department, the Post Office Department, the

Federal Prison Industries, Inc., and the Government Printing Office. Advantages of procurement through these Governmental agencies include assured quality of product through standardization of items, reduction in administrative procedure because advertising requirements have been already fulfilled, and reduced costs through quantity purchase.

■ 10. CLASSIFICATION OF SUPPLIES.—*a.* The term "supplies" includes both materials and nonpersonal services (electric current, gas, water, etc.). Material supplies are classed as general or special. The Quartermaster Corps procures principally the general supplies common to two or more arms and services.

b. To facilitate procurement, all supplies are divided into commodity groups as shown in section III of the Federal Standard Stock Catalog. These commodity groupings are used in procurement activities and for procurement planning.

■ 11. REQUIREMENTS.—The type and quantity of items required are covered in approved Tables of Basic Allowances and Tables of Allowances. Great care is exercised in the preparation of these tables by the using arm or service concerned. The Table of Allowances for Posts, Camps, and Stations are dependent upon annual appropriations and are prepared by The Quartermaster General as specifically directed by the Secretary of War.

■ 12. FUNDS.—Funds for the procurement of supplies and services are allotted annually by the Congress to the various supply arms and services in accordance with approved needs as set forth in the annual budget estimates.

■ 13. METHODS.—Under its system of centralized control and decentralized operation, the Quartermaster Corps utilizes four methods of procurement:

a. Centralized.—Those items for which the requirements of the entire Army can be consolidated for long periods of time and which can be advantageously purchased by one office are purchased and distributed by certain designated depots only.

b. Regional.—Supplies which are consumed at a fairly uniform rate and of which the requirements of a regional area for a period of at least a few months can be consolidated

and which can be advantageously purchased by one office in such an area are purchased and distributed only by regional depots designated by The Quartermaster General.

c. Local.—Perishable articles and articles not carried in stock by distributing depots or assigned to special supply points for purchase and distribution are purchased by post and station quartermasters or by distributing depots as determined by corps area and department quartermasters.

(1) Funds for the procurement of such items are allotted by The Quartermaster General. Subject to certain restrictions, local purchase is authorized by corps area and department quartermasters whenever supplies are readily obtainable and no price advantage would exist by depot purchase after consolidation of requirements.

(2) When requisitions are received at a depot for supplies not carried in stock and the quantities are small or of such a nature that local purchase is justified, such requisitions are returned through channels with recommendation for local purchase.

d. Restricted.—Procurement of certain supplies must be controlled closely owing to limited funds, infrequent use, or rigid specifications. Such items are listed in circulars of the office of The Quartermaster General and all requisitions for these items must be forwarded to The Quartermaster General. The quartermaster agency best suited to purchase such items is designated as the procuring agency.

■ 14. CONTRACTING OFFICERS.—*a.* Purchases are made only by officers who have been designated as contracting officers by the chief of the supply arm, service, or bureau concerned. This designation may be accomplished by either general or special instructions.

b. In definite quantity purchases, the officer who signs the agreement makes the purchase. In indefinite quantity agreements, the officer who signs the instrument bearing the statement as to the specific funds chargeable and the sufficiency thereof makes the purchase.

■ 15. ADVERTISING.—*a.* The basic laws require that advertising for bids precede the purchase of supplies. Exceptions, under certain circumstances, are authorized in Army Regulations which cover procurement activities of the War Department.

b. Compliance with basic laws and numerous regulations covering the subject of advertising for bids constitutes a necessary phase in the procurement of all supplies.

■ 16. CONTRACTS.—*a.* All transactions which involve the expenditure of funds for procurement of supplies must be evidenced by a prescribed, written record.

b. Contracts may be formal or informal depending upon the amount involved and duration of the contract.

c. Open market purchases not exceeding $500, which are based on oral quotations and involve only one payment, do not require a written agreement but a written acceptance must be signed by the purchasing officer. Such purchases are classified as informal contracts.

d. A contract once entered into cannot be modified except for the benefit of the United States. Standard contract forms provide for changes to be made by the contracting officer in the form of "change orders." Change orders are mailed to the contractor in the form of a letter. If such changes are accepted by the contractor, the contract stands modified.

■ 17. OPEN MARKET PURCHASES.—*a.* Under certain circumstances, purchasing in the open market, that is, without the formality of advertising, is authorized. This does not necessarily mean purchase without securing competition.

b. The Act of June 12, 1906, authorizes purchases of supplies and services in the open market where the amount required does not exceed $500. Other authorized open market purchases include—

(1) Horses and mules within maximum prices fixed by the Secretary of War.

(2) Supplies required in an emergency.

(3) Where formal advertising is impracticable or results in unsatisfactory bids.

(4) Subsistence stores which are specially authorized.

c. Monthly reports with necessary explanations from all procurement officers to the Assistant Secretary of War are required in order to insure compliance with regulations covering open market purchases.

■ 18. LIMITATION AND RESTRICTIONS.—*a.* Procurement officers, as authorized agents of the Government, are limited and restricted by—

(1) Statutory laws.
(2) Acts of Congress.
(3) Executive orders.
(4) Decisions of the Comptroller General.

b. These laws and regulations are covered generally in the 5-series of Army Regulations. Prohibitions relative to certain acts of contracting officers include—

(1) Entering into contracts without securing definite appropriations to cover payment for supplies or services.
(2) Contracts and expenditures in excess of appropriations.
(3) Advances of public money before services or supplies are obtained.
(4) Acceptance of voluntary services.

c. Other laws and regulations require or authorize—

(1) Compliance with laws relative to wages and hours of employees of contractors (Walsh-Healey Act).
(2) Performance of certain work at Government-owned arsenals.
(3) Preference to American labor and materials.

■ 19. INSPECTION BEFORE ACCEPTANCE.—*a.* Before supplies are accepted, they must be inspected either at manufacturers' or dealers' plants or at point of delivery and only articles that conform to specifications, description, or sample will be accepted. The contracting officer or officer in charge of inspection and delivery, if one is designated, provides the necessary inspecting personnel and issues such instructions as may be required in cases where inspection at point of origin is required.

b. Post, camp, and station quartermasters are responsible for complete inspection of supplies made by local procurement. Where facilities for local inspection are lacking, such supplies are inspected by personnel from the proper supply depot.

c. Depots, which are designated as central procurement agencies for specific items, also provide the necessary inspectors for such items.

d. The facilities of the Bureau of Standards are extensively used in connection with experimental testing, inspection, and development work. This type of inspection must be directly authorized by The Quartermaster General, who allots funds to cover necessary costs.

■ 20. REPORTS.—The following reports on procurement activities are required to be submitted:

a. Chiefs of arms, services and the National Guard Bureau submit reports and recommendations to the Assistant Secretary of War in all cases where the procurement of supplies from another supply arm or service or from Government-owned manufacturing establishments under control of the War Department has proved uneconomical or undesirable.

b. A Report of Procurement Operations is rendered for each calendar month on the last day thereof by every officer to whom funds have been allotted for the procurement of supplies or nonpersonal services. Open market purchases in excess of $100.00 are each listed separately on this report. This report also covers the requirement of reporting all "foreign purchases." The combined report is submitted to the Assistant Secretary of War.

c. A copy of an abstract of all bids received for the procurement of supplies should be mailed to the Purchase Information Section, Office of the Assistant Secretary of War, as soon as practicable.

■ 21. IN THEATER OF OPERATIONS.—Supplies are obtained in the theater of operations from two sources: by exploitation of the resources of the theater of operations, and by forwarding from the zone of the interior. It is fundamental that all supplies and facilities available in the theater of operations should be utilized to the utmost. This is especially true of subsistence and forage. The fullest utilization of local supplies becomes increasingly important when the theater of operations lies in a country deficient in railroads and waterways. When the theater of operations is in hostile territory, supplies are obtained by purchase or requisition. Requisitions are either direct (foraging) or by systematic collection into depots. Requisitions are resorted to only when authorized in orders of the commander of the theater of operations and are enforced by detachments commanded by commissioned officers. Property obtained by requisition is either paid for or restored with suitable indemnity. However, better results are usually obtained when cash payment is made for the supplies taken. If the supplies are not paid for upon delivery, receipts are given; these receipts are redeemed at the earliest possible date. Under certain conditions, with a view to taking full

advantage of available resources in the theater of operations, it may be advisable to create a purchasing agency to supervise the purchase or requisition of supplies. This agency should furnish information as to the character of supplies which can be advantageously obtained in the theater of operations, and other pertinent information as may be necessary to permit intelligent determination as to the expediency of purchase or requisition. A well-organized system of purchase and requisition is of great value, but exclusive reliance can not be placed on local procurement even in the most productive countries. Resource must invariably be had to shipments from the zone of the interior.

SECTION III

STORAGE, DISTRIBUTION, AND ISSUE

■ 22. GENERAL.—Supplies, having been procured as described in section II, must be stored, distributed, and issued to troops as required. Operation of this phase of the supply service in the zone of the interior and in the theater of operations is described in the paragraphs below.

■ 23. ZONE OF THE INTERIOR.—*a. Depots.*—Depots are the backbone of the system of supply and are the means through which the flexibility of supply operations is assured. Depots of the zone of the interior are classified as general depots, area general depots, arm or service depots, area arm or service depots. General depots are supply establishments for the storage of supplies of more than one supply arm or service. Quartermaster depots are service depots for the storage of quartermaster supplies only. Area depots (area general or area quartermaster) are supply establishments for the storage of supplies for distribution within the limits of particular territorial commands.

(1) Storage space in the zone of the interior is allotted to the supply arms and services by the Secretary of War. The Quartermaster General is charged with keeping adequate records of all storage space owned, leased, or required by the War Department.

(2) General depots operate under the administrative control of the War Department and are designated according to geographical location. Each general depot is organized into sections corresponding to the supply arms

and services having supplies stored therein. The Quartermaster General designates a depot quartermaster at each of the general depots who has charge, under the commanding officer, of the guard, fire protection, general police, utilities, transportation, and other quartermaster activities common to all sections of the depot. The Quartermaster General is represented at each general depot, where a quartermaster section exists, by a quartermaster supply officer. This representative is charged with the proper storage and distribution of quartermaster supplies stored at the depot, together with the control of personnel engaged in the handling of these supplies or maintaining records pertaining to their storage and issue.

(3) The organization of quartermaster depots and the administration thereof are a direct responsibility of The Quartermaster General. Commanding officers of quartermaster depots are Quartermaster Corps officers and are assigned by order of the Secretary of War on the recommendation of The Quartermaster General.

b. Distribution.—(1) *Corps areas.*—All War Department activities within the territorial limits of corps areas are assigned to depots as shown in Circular 1–4, OQMG.

(2) *Oversea departments.*—(*a*) The New York General Depot furnishes supplies of all kinds, except coal, forage, motor transport supplies, and certain subsistence supplies to the Panama Canal Department, and supplies of all kinds, except coal, motor transport supplies, subsistence, and forage to the Hawaiian Department The New York depot furnishes supplies of all kinds including subsistence to the Puerto Rican Department. The San Francisco General Depot furnishes forage and certain subsistence supplies to the Panama Canal Department, subsistence and forage to the Hawaiian Department, and all supplies, except as otherwise directed herein, to the Philippine Department. Separate instructions are issued from time to time to interested offices concerning subsistence supplies to be furnished the Panama Canal Department.

(*b*) Motor transport supplies are furnished to oversea depots on approved requisitions to The Quartermaster General insofar as practical, from stocks on hand at motor transport depots within the annual budget credit allowance.

(*c*) Distribution to War Department activities within oversea departments is made by the depots shown below:

Depot	Area of distribution
Philippine Quartermaster Depot	Philippine Department.
Hawaiian Quartermaster Depot	Hawaiian Department.
Panama-Pacific General Depot	Panama Canal Department.

c. Classification.—The Federal Government has adopted 74 classes for the storage and issue of supplies. Use of this classification, insofar as applicable, is prescribed for the Quartermaster Corps, and it is used for all purposes of storage, issue, property record accounting, stock reports, and requisitioning property. All items of standard stock have been or will be listed with correct nomenclature in their proper classes in the Quartermaster Corps Supplement, together with information relative to their procurement, storage, and issue. Articles not included in the supplement are classified as nonstandard stock and are to be procured locally as required.

d. Warehousing.—The details of warehousing are dependent to a large degree upon the kind and amount of supplies and local warehouse conditions, and each situation constitutes a separate problem to be worked out locally in detail. In warehousing supplies, their arrangement should be such that—

(1) Supplies are reasonably secure against theft and protected from the deteriorating effects of weather, heat, light, moisture, and destructive effects of vermin and rodents.

(2) They may be readily removed for issue or shipment and labor of handling is reduced to the minimum.

(3) They may be readily inspected and checked for inventory purposes.

(4) Waste space is reduced to the minimum consistent with efficient and economical operation.

(5) Maximum permissible floor load is not exceeded.

(6) Arrangement does not interfere with the free use of fire extinguishers and other fire fighting apparatus.

(7) Supplies are segregated by item, and any subdivision of items, such as sizes, lots, or grades which may affect the proper conduct of an issue or inventory. The importance of carefully worked out storage plans for storage areas cannot be overestimated. Intelligent planning ahead avoids subse-

quent inefficient operation due to poor utilization of space and avoids future rearrangement of stocks.

e. Inventories.—Complete, detailed, and accurate inventories of property and supplies on hand in storage must be made by accountable officers at least once each fiscal year and at such other times as circumstances may require. Inventories are made for one or more of the following reasons:

(1) To ascertain exact quantities of supplies on hand.

(2) To adjust errors in the stock record cards of an accountable officer.

(3) To permit appropriate adjustment of quantities on hand so as to maintain stocks of supplies in "balanced" or proportionate quantities to meet the needs of the troops.

(4) To inform higher administrative agencies of the status and level of supplies held in storage at supply points under their jurisdiction.

f. Tables of Allowances.—Allowances of quartermaster supplies are prescribed by the War Department and are published to the Army in Tables of Organization; Table of Allowances for Posts, Camps, and Stations; Tables of Basic Allowances; and in various Army Regulations covering supply for auxiliaries such as Reserve Officers' Training Corps and for special articles, such as forage, fuel, electric current, and others.

(1) Tables of Organization show, for purpose of information, the authorized allowances of transportation, both animal and motor, and principal items of equipment for the unit to which each pertains.

(2) Tables of Basic Allowances prescribe the authorized allowances of equipment for units and individuals. Allowances of equipment for special purposes and for component parts are not shown in these tables.

(3) Table of Allowances for Posts, Camps, and Stations prescribe allowances for troops and individuals while at posts, camps, or stations and these allowances are in addition to those shown in Tables of Basic Allowances. These items are not ordinarily taken with a unit into the field or on change of station.

g. Maintenance of stocks.—The fundamental rule of stock maintenance is that there shall always be on hand a sufficient quantity of any item to supply normal needs until the stock of that item can be replenished. Post and sta-

tion quartermasters, quartermaster supply officers of general depots, and commanding officers of quartermaster depots are responsible (within the limit of funds made available to them) for the maintenance of stocks to meet their requirements.

(1) The maximum stock requirements of depots are based on issues actually made during a past period which should not exceed 1 year. The maximum stock of depots in the Panama Canal, Hawaiian, and Philippine Departments are computed as directed by department commanders.

(2) The maximum stock requirements of posts and stations are computed subject to the approval of corps area and department commanders and should not exceed expected requirements for a period of 6 months.

h. Replenishment.—(1) Quartermaster supply officers of general depots and commanding officers of quartermaster depots in the continental United States submit replenishment requisitions semiannually for all standard stock supplies that will be required for stock at their depots.

(2) Standard stock supplies, which are not purchased locally from available funds, are obtained by posts and stations on requisitions submitted at 3-month intervals. Requisitions for certain commodities are submitted as directed by The Quartermaster General. Requisitions for nonstandard stock supplies are submitted from time to time as necessity for such supplies arises.

i. Requisitions.—(1) Supplies are divided for requisition purposes into storage classes as listed in the Quartermaster Supplement. They are issued to the Army on properly approved requisitions within the prescribed allowances. Post and station quartermasters secure supplies for issue and replenishment of stock on requisitions submitted to their corps area or department commanders. Separate requisitions are prepared for each supply point. Separate sheets are used for each storage class. Separate requisitions are prepared for items of standard stock, nonstandard stock, and for motor transport supplies.

(2) These requisitions, after approval by the corps area or department quartermaster, are forwarded to the designated depot for supply. If the approval of The Quartermaster General is required before the requisition can be filled, the corps area or department quartermaster forwards

the requisition to The Quartermaster General with an expression of opinion or recommendation shown on the face of the requisition.

(3) Requisitions for supplies for auxiliaries such as Reserve Officers' Training Corps or Citizens' Military Training Camps are prepared and routed in accordance with the special procedure prescribed for the particular auxiliary.

j. Issue of supplies.—(1) Issue of supplies to troops, individuals, or to offices are made with the accountability remaining unchanged; with the accountability passing to a regimental or other unit supply officer; or with the accountability for the article ceasing at the time of issue or consumption.

(2) Articles of a nonexpendable nature authorized for issue by the terms of Table of Allowances for Posts, Camps, and Stations are made on memorandum receipt with a transfer of responsibility but not of accountability.

(3) Articles of a nonexpendable nature authorized for issue by the terms of Tables of Basic Allowances ordinarily are covered by a transfer of accountability as well as responsibility to the unit supply officer by means of shipping tickets.

(4) Articles of an expendable nature, except fuel and supplies for the maintenance and operation of post activities, are dropped from accountability when receipted for by a unit supply officer.

(5) Articles consumed in the maintenance and operation of the regular post activities are dropped from accountability monthly on the certificate of the quartermaster approved by the commanding officer.

■ 24. THEATER OF OPERATIONS.—In general, the procedures of storage, distribution, and issue as practiced in the zone of the interior apply equally to the theater of operations. The mission of each phase of the supply system is to accumulate supplies for the military forces and to issue these supplies as required. The mission in the zone of the interior is continuous during both peace and war, while that in the theater of operations is carried on only during time of war.

a. Depots (FM 100–10).—It is the function of the communications zone to provide for the necessary flexibility of supply to the combat zone by the establishment of an adequate echelonment of supply depots from the base, where

supplies are received from the zone of the interior, to the combat zone where supplies are consumed by the troops engaged in combat. Depots of the communications zone are organized as general depots or arm or service depots in the same manner as in the zone of the interior. Depots in the theater of operations are designated as follows:

(1) *Base depot.*—A general or an arm or service depot, designated as such by the commander of the theater of operations, located in the base section of the communications zone for the reception and storage of supplies received from the zone of the interior or procured in the base section. Base depots must always be located away from the docks or other congested traffic centers, or they will soon become so congested as to be unable to operate. Nothing must be stored in shipping or transit areas. Space must be kept clear for loading and unloading. In these depots, supplies are stored in bulk, no attempt being made to classify or "balance" such stock. Base depots are wholesale establishments and should be organized and function as such.

(2) *Intermediate depots.*—Intermediate depots are for the storage and distribution of balanced stocks forwarded from base depots or procured in the intermediate section. They are established only when the depth of the communications zone is such that it is essential to provide an additional echelon in the distribution of supplies. They also provide additional storage space for supplies from the base ports, thus reducing the congestion in base depots. These depots provide the first echelon for classified and balanced stocks, as they must provide storage for supplies in the manner that supplies are to be consumed. They may be called upon at a moment's notice to function as advance depots.

(3) *Advance depots.*—Advance depots are for the storage and distribution of supplies of balanced stocks classified as to issue. Supplies stored in advance depots are reduced in quantity below that maintained in base and intermediate depots in order to prevent rigidity in the supply system in the vicinity of the combat zone. Stocks are maintained at the prescribed level necessary to meet the requirements for a comparatively short period of time.

b. Regulating stations (FM 100–10).—(1) A regulating station is a traffic control agency established on the lines of communication through which movements are directed and

controlled to and from the combat zone by the commander of the theater of operations. They are provided usually at the rate of one for each army or similar command. A very small reserve of supplies, sufficient only for day to day adjustment of daily train loads, is usually maintained at a regulating station. The principal function of the regulating station is to prevent congestion of supply lines into the combat zone by forwarding only the desired supplies and personnel to the front and evacuating personnel and material to the rear in accordance with the policy and directives of the commanding general of the theater of operations.

(2) A station quartermaster serves on the staff of the regulating officer to perform the usual station quartermaster functions, including supply for the regulating station installation.

(3) A quartermaster transportation section forms a part of the regulating station staff. This section has a troop movement branch and a supply movement branch. This section receives the requests for rail movements, assembles the requirements for railway transport, and insures that movements to the combat zone are in accordance with priorities established by the regulating officer. This section functions in close cooperation with the military railway service which arranges train schedules and operates the railways.

(4) A quartermaster supply section is organized at each regulating station. This section receives requests from the army, passes them on to the advance depots, transmits tonnage, car, or train requirements to the quartermaster transportation section, follows up the arrangements made for shipping, and notifies the army when shipments may be expected.

c. Army quartermaster depots.—These are located as far to the front as practicable but out of hostile artillery range. They are established for the reception and temporary storage of supplies which because of the situation must be kept closer to the army than the advance section of the communications zone. The level of supplies of the several classes to be established and maintained in the army service area will be determined by the army commander based on many considerations, such as status of credits; length, vulnerability, and capacity of lines of communication; tactical (strategical) lines of action under consideration; and status of supply within subordinate units. The minimum stockage will con-

sist of sufficient motor fuel and lubricants to resupply all vehicles for 1 day's maximum activity (class III). Items of essential combat supplies of classes II and IV usually will be stocked in quantities sufficient to replace expenditures for 1 or 2 days of operations. In locating army depots it should be borne in mind, in case of an advance of the army, that the army depot of today may become an advance depot of the communications zone tomorrow.

d. Storage space in the communications zone.—(1) Storage space in the communications zone is allotted to the services by the commander of the communications zone, who also determines the location of depots, repair establishments, and other supply establishments pertaining to each service.

(2) The quartermaster of the communications zone keeps adequate records of all storage space occupied by establishments of the Quartermaster Corps, including its disposition and utilization. He makes application and recommendation from time to time for any additional storage space or depots that may be required in order to discharge his responsibilities.

(3) Covered storage must be kept down to bare necessity. At least 40 percent of the rations and a large proportion of other stores can be stored outside for periods of 2 or 3 months without any appreciable loss. Experience has indicated that about 4 square feet of covered storage per man is necessary for a 45-day reserve. Hay, canned goods, and many other items can be placed in the open with paulin covers. The amount of open storage space required is generally about three times that of covered storage.

e. Depot lay-out and construction.—The following fundamentals govern the lay-out and construction of quartermaster depots in the communications zone:

(1) The ground space, if at a general depot, should be laid out in separate areas for each supply arm or service represented at the depot in the necessary proportions, and construction should proceed so that the Quartermaster Corps can begin storing supplies and at the same time, or later, can expand without mixing its supplies with those of other services.

(2) Each storehouse area is laid out in sections, each section having a ladder track on each side connected by house tracks about 1,700 feet long, there being one for each three warehouses. These tracks should be about 150 feet apart,

giving space enough for open storage on the opposite side of the track from the warehouses and at the same time providing a fire break.

(3) There should be no dead end in the track system, except where particularly desired for unloading vehicles, so that cars can be moved with the greatest facility.

(4) Provision must be made for the unloading of a particular commodity from incoming cars at the same time as other cars are being loaded with the same commodity for outgoing shipments. This condition can best be met by having each commodity warehouse served by two railroad tracks. The track on one side of the warehouse to be used for loading and the track on the opposite side to be used for unloading of supplies. If separate tracks cannot be provided, then a portion of the one track must be designated for loading and another portion reserved for unloading of supplies.

(5) Size of storehouses should be such as to involve the minimum amount of labor in handling stores, usually 60 feet by 400 to 500 feet, a size generally considered the most economical from the standpoint of both operation and construction.

(6) When time and available labor and material permit, which is seldom the case, building the floor of the storehouse on a level with the floor of the average freight car will facilitate loading and unloading operations. However, it may be necessary owing to dearth of material, to construct many storehouses without floors and to place perishable supplies, such as flour and sugar, on dunnage.

(7) Storehouses (or open storage) from which shipments are made by truck should be on a flank of the depot in order to avoid the congestion and delay caused by crossing railroad tracks. These storehouses should be located as far as practicable on existing roads.

(8) No existing roads should be closed by storehouses. It takes more time to construct new roads than to select new sites for storehouses. Moreover, it is often difficult to obtain material for road construction.

(9) Receiving, classification, and departure yards are essential features of all large depots.

(10) Ammunition depots should be separate and distinct from all other depots, and chemical warfare and gasoline

storage should be at a safe distance from the remaining lay-out.

(11) The building program must be carried out so that expansion is feasible and so that each unit is completed progressively and in succession in such a way that it can be used immediately. For example, it is wrong to start construction on a number of storehouses when only one is needed at once. It is wrong to lay ten railroad tracks in a yard before alining and ballasting any, when perhaps only three tracks are needed immediately. The loss of efficiency caused by using small units is insignificant compared to the importance of fulfilling the requirements of the military situation.

f. Classification of supplies.—All efforts should be made toward the simplification of supply. Supply service in the theater of operations must become as automatic as possible. This includes the classification of supplies in a manner which will expedite supply and effect convenience in administration; hence supplies for the theater of operations are divided into five classes. (See FM 100–10.)

(1) *Class I.*—Those articles which are consumed at an approximately uniform daily rate irrespective of combat operations or terrain and which do not necessitate special adaptation to meet individual requirements, such as rations and forage.

(2) *Class II.*—Those authorized articles of equipment for which allowances are established by Tables of Allowances and Tables of Basic Allowances. This equipment includes that which is required for the personal use of the individual and necessitates special arrangements to meet individual requirements, such as clothing and gas masks, which are consumed at an approximately uniform rate, and also organizational equipment, including vehicles both motorized and animal-drawn.

(3) *Class III.*—Engine fuels and lubricants (air and ground), which are required for the operation of motor vehicles and aircraft.

(4) *Class IV.*—Those articles of supply which are not covered in Tables of Basic Allowances and the demands of which are directly related to the operations contemplated or in progress, such as construction materials and machinery, except ammunition.

(5) *Class V.*—Ammunition, pyrotechnics, antitank mines, and chemicals.

g. Issue of supplies.—Combat troops should be constantly supplied with their current needs and at the same time not be burdened with excess supplies. To assure an efficient state of supply, the following methods of issue are prescribed:

(1) Class I supply is usually provided on an automatic basis. (See par. 118.)

(2) Class II and class III supplies are usually made available in the form of credits in designated depots. When credits are established for an army in communications zone depots, calls are made as necessary by the army supply service concerned, direct on the proper communications zone depot or through the corresponding supply officer at the regulating station. If sent direct to the communications zone depot, a copy is sent to the regulating officer. Shipments are made up at the depots and dispatched, through the regulating station, to the proper army supply establishment as outlined above for class I supplies. The supply officers submit approved requisitions direct to the proper supply service of the next higher echelon in the chain of supply where the requisitions are filled from available stocks. If sufficient supplies are not available to complete the issue, the unfilled portions of the requisition are extracted and forwarded for the necessary action to the next higher echelon in the channel of supply.

(3) Class IV supplies are furnished on requisitions. Articles of supplies of classes II and III may by reason of special stringency, be transferred to class IV pending the reestablishment of normal status of supply in these articles. Requisitions for class IV supplies must bear the approval of the commander of the theater of operations.

h. Replenishment of stocks from the zone of the interior.—(1) Supplies for a theater of operations are obtained from two sources:

(*a*) Exploitation of resources of the theater and captured material.

(*b*) Replenishment of stocks from the zone of the interior. An initial supply for each theater of operations must be worked out in advance and shown in the original plan or in the appendices thereof for each particular theater. The maintenance of stock then becomes a matter of replenishment.

(2) Under the general instructions as to the requirements of the theater and the policy as to priorities as determined by the commander of the field forces, the computation of detailed requirements and the replenishment of quartermaster supplies from the zone of the interior becomes a responsibility of the chief quartermaster on the staff of the commanding general of the communications zone.

(3) Replenishment requests or requisitions will take the form of a draft upon a designated depot within the zone of the interior or will be by direct requisition on the War Department.

(4) Normally, the War Department will establish credits in zone of interior depots for each theater of operations, upon which the commander of the forces may make direct calls. When such credits are established, they expedite supply, leaving the War Department to handle the important matters of procurement in the zone of the interior and the broad matters concerning the administration of supply.

(5) The purpose of establishing credits is to eliminate unnecessary administrative procedure and thus to expedite the supply of articles in any class. Supplies earmarked as credits are considered in certain zone of interior depots at the disposal of the commanding general of the theater of operations for a definite period of time. These supplies are therefore subject to draft on demand directly from the commanding general of the theater of operations through his authorized representative, the commanding general, communications zone. This system assures a definite amount of supplies for the period stated and at the same time tends to relieve the communications zone from the necessity of storing vast quantities of supplies in communications zone depots. At the end of the period stated in the credit grant, all undrawn balances revert to depot stock or, upon request from the commander of the theater of operations or his representative, a new credit may be arranged for a succeeding period. A copy of each credit set-up is furnished the commanding general, theater of operations. The commanding general, communications zone, in turn furnishes the chief quartermaster on his staff with copies of credits pertaining to the Quartermaster Corps.

SECTION IV

SUBSISTENCE

■ 25. ORGANIZATION.—Subsistence stores at posts, camps, and stations are handled through a sales commissary which normally functions under the direct supervision of a sales officer whose duties are prescribed in War Department regulations. Usually there are five branches in the commissary organizations as follows: Administrative branch, sales store branch, nonperishable warehouse branch, perishable warehouse branch, and bakery branch.

■ 26. REQUISITIONS.—Requisitions for subsistence stores must be submitted in accordance with instructions contained in existing regulations.

■ 27. PROCUREMENT.—Procurement of subsistence supplies is made in accordance with the provisions of existing regulations. Further information with reference to procurement of supplies in general is given in section III.

■ 28. INSPECTION.—*a.* A proper inspection of subsistence stores requires a thorough knowledge of the authorized food articles, Federal and U. S. Army specifications and trade names or terms should be thoroughly understood.

b. The inspection of meat and dairy products is made under the supervision of veterinary personnel in accordance with instructions in Army Regulations.

■ 29. STORAGE AND ISSUE.—*a.* The officer charged with responsibility for subsistence supplies should have a knowledge of storage with respect to those items requiring the coolest or driest or otherwise favorable conditions and those which can stand less favorable storage facilities. Good warehousing is the systematic handling of supplies with a minimum amount of time and effort. Details will depend to a large degree on the kind and amount of supplies and local warehousing conditions. Each situation constitutes a separate problem to be worked out locally.

b. Subsistence stores in storage should be inspected frequently by the accountable officer for the purpose of determining their condition. Stores longest on hand should be issued, sold, or shipped first.

■ 30. SALES AND ISSUES. — *a. Classification of subsistence stores.*—Subsistence stores are classified as ration articles, which are components of the ration and substitutes therefor prescribed in Army Regulations for the subsistence of troops; sales articles, which are articles authorized for sale in addition to ration articles; and exceptional articles, classified as confections, groceries, etc., which are not component articles of the garrison or field ration and are not shown on the authorized sales list.

b. Charge and cash sales.—Charge and cash sales are made to organizations and individuals entitled to purchase in accordance with existing regulations. A sales book register must be properly kept, the accounting for all books being made by serial number. A trial balance of all charge accounts must be made three times a month.

c. Post bakeries.—Post bakeries are operated by the quartermaster usually under the supervision of the sales officer and furnish the fresh bread for troops in garrison. The records kept at the bakery must be inspected and audited at frequent intervals.

d. Handling proceeds of sales.—Sales officers must deposit funds with the disbursing officer in accordance with existing regulations. They must be deposited in person by the sales officer, a report of sales being prepared and delivered to the disbursing officer with the funds.

e. Rations.—(1) A ration is the allowance of food for the subsistence of one person for 1 day.

(2) (*a*) The *garrison ration* is that prescribed in peacetime for all persons entitled to a ration, except under specific conditions for which other rations are prescribed.

(*b*) The garrison ration is issued to troops in the form of a money allowance, based on the current sales prices of the component articles of the garrison ration. Ration returns are submitted by officers under whom persons entitled to rations are serving on the first day of each month for rations due the preceding month. At the end of the month, or when the ration account is closed, the sales officer prepares a ration and savings account voucher showing the data necessary for each organization.

(*c*) When troops are on a ration savings basis, drawing a garrison ration, sales of subsistence stores are made to organ-

izations. Subsistence supplies are normally drawn on a daily basis in accordance with requisitions for items submitted by each organization. The organization is not restricted to the purchase of articles of the ration.

(3) The *Filipino ration* is that prescribed in time of peace for Philippine Scouts.

(4) The *travel ration* is for troops traveling otherwise than by marching and separated from cooking facilities.

(5) *Field ration.*—(*a*) The field ration is that prescribed for use only in time of war or national emergency when the garrison ration is not used. It is issued in kind and no ration savings are allowed. Its components and substitutes are prescribed by the War Department or the commander of the field forces and consist of the following:

1. *Field ration A* corresponds in general to the peacetime garrison ration and is generally perishable; it is not suitable as a reserve ration.
2. *Field ration B* is the same as field ration A except that nonperishable substitutes replace perishable items. This ration is suitable for reserve purposes.
3. *Field ration C* is a cooked balanced ration in cans. Each ration consists of three cans of prepared meats and vegetables and three cans of crackers, sugar, and soluble coffee. As this ration is not perishable, it is suitable for use as a unit reserve or as an individual reserve.
4. *Field ration D* consists of three 4-ounce chocolate bars per ration. It is a nonperishable ration and is suitable for use as an individual reserve.

(*b*) When the field ration is issued in the zone of the interior, the normal procedure is to issue nonperishable components of the ration on an approximately 10-day basis. Perishable components of the ration are issued daily.

f. Sales; general.—(1) Sales commissaries stock such authorized articles of subsistence supplies as it may be practicable to keep on hand in reasonable quantities for sale to those entitled to purchase them.

(2) On the first day of each month, or whenever necessary, the sales officer computes a price list which is used in making all sales of subsistence supplies during the current month.

(3) At the close of business each day, the amount of

charge and cash sales pertaining to each section of the store is determined.

(4) The sales officer must maintain a charge and cash sales book register.

■ 31. PROPERTY ACCOUNTABILITY AND RESPONSIBILITY.—*a. Sales officer.*—The sales officer has charge of all subsistence stores except stock at depots and is accountable and responsible for all such stores. The accountability is kept by money value only and is entirely distinct from the accountability of the quartermaster as evidenced by items listed on stock record cards. The sales officer functions under the direct supervision of the quartermaster.

b. Commanding officer.—The commanding officer is responsible and pecuniarily liable with the sales officer that the regulations in regard to the preservation, use, and issue of property are observed.

c. *Inventories.*—Two separate and distinct monthly inventories are made, reconciled, and recorded, one by the sales officer and the other by a disinterested officer designated by the commanding officer.

d. Lost, destroyed, or damaged property.—This property will be accounted for in accordance with the provisions of Army Regulations.

e. Consumption record.—The consumption record is used in the preparation of annual and quarterly requisitions. A loose leaf stock record form can be used for the purpose of maintaining a record of consumption for all items carried in annual and quarterly stocks.

f. Accounting procedure.—The basic rule governing accounting for subsistence supplies in terms of money value requires that debits and credits be entered at current sales price. Where a change in sales price occurs as in subsistence stores over the month end, the increases and decreases, multiplied by the items on hand at the time of such change, are reflected respectively as debits and credits. The inventory value of supplies determined prior to a price change must, therefore, be adjusted. Such adjustment is required for subsistence stores at the beginning of each month.

(1) *Sections of the account.*—(*a*) The account is divided into such sections as are required to meet local conditions and avoid dual responsibility.

(*b*) A separate section is established for each appropriation or procurement authority. Supplies and services are accounted for in separate sections even though the same appropriation or procurement authority is involved. When instructions require allocation by purpose numbers of funds pertaining to the same appropriation or procurement authority, subsections are established to agree with the allocations.

(2) *Bakery account.*—Where a bakery is operated, a subsection is established under the subsistence account to cover that activity. At the end of the month, the account is balanced and the sales price of bread for the succeeding month is determined in accordance with existing regulations.

(3) *Articles used for care and preservation.*—Ice, twine, paper bags, wrapping paper, and charge and cash sales books which are consumed in connection with the care, issue, and sale of subsistence stores are dropped by money value on a certificate of expenditure signed by the sales officer and approved by the commanding officer.

g. Preparation of the account.—(1) The account is prepared each month by making debit and credit entries as follows:

(*a*) *Debit entries.*—Debit entries include the total money value of the inventory from the preceding month, inventory adjustment sales account (debit), supplies received by local purchase or by shipment from depots or other stations, and cash and charge sales accounts transferred from another sales officer or from the quartermaster as a result of the sale of supplies and services.

(*b*) *Credit entries.*—Credit entries include inventory adjustment sales account (credit); shipments to other stations; vouchers for coffee lost in grinding, surveys, and issues; cash and charge sales, including accounts of supplies and services transferred to the sales officer; inventory of supplies on hand at date of inventory; and deductions under allowances of $\frac{3}{10}$ of 1 percent or surveys where total loss exceeds $\frac{3}{10}$ of 1 percent.

(2) Each voucher is entered in terms of total money value computed at the current sales price.

h. Control of account.—In addition to the account and supporting vouchers forwarded to the finance officer for audit, each sales officer maintains the following records which

are filed with and form a part of each month's records but copies of which are not forwarded:

(1) *Daily record of sales.*—This record shows for each day on which sales were made the date, the section or subsection and the amount of charge and/or cash sales. Cash collections made during the first 10 days of the month for charge sales made during the preceding month are also recorded. The entries are made at the close of each day's business by the sales officer *in person*, who retains the record in his possession at all times.

(2) *Voucher register and general control.*—(*a*) This record shows the date, voucher number, brief description of each voucher, section or subsection to which it pertains, and the money value entered either in the debit or credit column or both, as required.

(*b*) At the end of the month's business, the sum of each of the debits and credits as they appear on the voucher register and general control should equal the total of each of the debits and credits of the separate section accounts computed before any balancing (gain or loss) entries are made, thus affording a check on the month's work as a whole. Entries in this record are made by the sales officer or his principal assistant. When the record is maintained by the principal assistant, the sales officer *indicates verification* of each entry by his initials at the time the supporting voucher is authenticated.

(3) *Record of procurements.*—A blotter record of procurements is maintained by the sales officer or a competent assistant. The entries in this record are verified and initialed at the time the sales officer signs each purchase order and receiving report. At the close of the month, the sales officer checks this record to see that a formal purchase instrument has been issued to cover all supplies ordered informally and that receiving reports have been prepared for all supplies received. The record of any transaction not completed by the receipt of the supplies and the preparation of a receiving report is transferred to the record of procurements pertaining to the succeeding month.

■ 32. SALES COMMISSARY COMPANY.—The sales commissary company organized for use in a national emergency for the purpose of furnishing certain items to messes and individuals

who are unable to procure these items from other sources, consists of three platoons with four sections to each platoon. The section is the basic unit. It is equipped with a sales trailer, stock trailer, and an administrative trailer. Trucks to move the trailers must be provided by headquarters of the units to which they are attached. Sections are normally assigned to combat divisions and will operate in rest areas and areas occupied by corps and army troops. When so attached or in operation, their activities are controlled by the quartermaster or commander of the unit to which attached or in whose area they are operating.

■ 33. OPERATION IN THEATER OF OPERATIONS.—The procedures outlined in War Department regulations which govern the operation of subsistence activities (including sales commissaries) in peacetime are equally applicable in the zone of the interior or the theater of operations in an emergency. The accounting for the supplies of a sales commissary company in an emergency would involve only one section of a commissary account, for example, subsistence, as compared to several sections for a peacetime commissary.

SECTION V

SALVAGE

■ 34. GENERAL.—*a.* The administrative details governing salvage activities in the zone of the interior are contained in Army Regulations and publications issued by the War Department. In the event of a national emergency and when it becomes necessary for the War Department to prescribe a theater of operations, the procedures set forth in Field Service Regulations supplemented by subsequent orders based upon the special situation, will govern.

b. Salvaged materials may consist of condemned property and waste materials accumulating within the Army as well as materials captured from the enemy or abandoned by our own troops and found on the battle fields.

c. Salvage activities are functions of the Quartermaster Corps performed under the supervision of officers of the quartermaster service detailed as salvage officers.

d. The object of salvage reclamation is to effect economy in tonnage in shipments from the zone of the interior and the conservation of military resources

e. In disposing of salvaged property, the first consideration is utilization within the Army. Property which is condemned as unserviceable by one arm or service often can be used to advantage by another arm or service. Also many items can be repaired economically in quartermaster shops and returned to stock for reissue, or the basic materials used to manufacture other needed articles in quartermaster shops provided for that purpose. Some of the accumulation is sold, and a very small percentage which has no reclamation value is destroyed.

■ 35. ORGANIZATION.—Two military units are provided: a salvage collecting company and a headquarters, quartermaster salvage depot.

a. Salvage collecting company.—The collecting company is organized with a company headquarters and three platoons of two sections each. The company headquarters performs the usual military administrative, supply, and messing duties and supervises the technical operations of the company as a whole. Each platoon has sufficient personnel to sort and classify salvage from a combat force of 25,000 men, and the company can serve a force of 75,000 men. Additional labor, if required, is furnished by quartermaster service units. Attached to the company are two enlisted men each from the Ordnance Department, Chemical Warfare Service, and Signal Corps, who function in an advisory and technical capacity as concerns salvage pertaining to their respective services.

b. Headquarters, quartermaster salvage depot.—The headquarters, quartermaster salvage depot, provides the administrative and technical force necessary to supervise the repair work and other operating functions at the depot. The depot is organized into a depot headquarters, an administrative division, a salvage division, and a repair division. The administrative division has an administrative branch and a service branch. The service branch is organized into a supply section, a utilities section, and a maintenance section. The salvage division is organized into an administrative branch, a classification branch, a disposal branch, and a storage branch. The repair division is organized into six branches: administrative, clothing and textile, shoe and leather goods, canvas and webbing, machinery and metal goods, and miscellaneous.

■ 36. OPERATION.—Quartermaster salvage operations include the collection, evacuation, classification, and disposition of all waste materials, abandoned property, condemned property, and unserviceable supplies except explosives, ammunition or component parts thereof containing explosives, and such other supplies as are exempted by the commander. Field salvage operations are directed by the salvage officer of the command, under the quartermaster.

a. Salvage collecting company.—(1) The mission of the salvage collecting company is the receipt, collection, sorting, and basic classification of all classes of salvage, waste materials, abandoned property, and unserviceable supplies at collecting points, dumps, and railheads and its evacuation to depots.

(2) Troop commanders are responsible for the collection of salvage from the battlefield and occupied areas and its delivery to designated points, usually the supply point for class I supplies. From the collecting points, the salvage is then collected by the salvage collecting unit and evacuated to the railhead.

(3) Salvage evacuated from the combat zone is sent to salvage depots in the communications zone, where it is further sorted, classified, and reclaimed by repair. The articles beyond repair are classified according to class for reclamation as raw materials for reuse in manufacturing.

b. Headquarters, quartermaster salvage depot.—(1) *Administrative division.*—The administrative branch maintains the records and performs the military and technical paper work incident to the operation of the depot and its personnel. The supply section of the service branch handles all classes of supply for the depot, including clothing and rations for the personnel employed and all of the machinery, tools, and technical operating supplies required in the repair shops. The utilities section of the service branch maintains the buildings, grounds, and machinery, including operation of the power and heating plant. The maintenance section provides watchman service, operates a general mess, and provides the transportation required about the depot.

(2) *Salvage division.*—The administrative branch supervises the activities of the division in general, including the assignment of personnel and the maintenance of salvage records. The classification branch supervises the receipt of sal-

vage sent to the depot, its classification, and distributes the various classes and items to the proper shops of the repair division and/or to the storage branch. The disposal branch is charged with the disposal of waste materials and nonreclaimable and nonreparable property. The storage branch is charged with the storage and disposition, by issue or shipment to depots of the various supply arms and services, of the serviceable and repaired property.

(3) *Repair division.*—This division repairs only items of common issue to all arms and services. It does not repair motor vehicles, weapons, aircraft, radios, or other technical Signal Corps, Medical Department, or Chemical Warfare Service equipment; such material is repaired in shops especially designed for this class of work and operated by the respective supply services. The administrative branch supervises the activities of the division in general, including the assignment of personnel and the maintenance of repair records. The clothing and textile branch is charged with the repair of clothing, fabric headwear, bedding, blankets, and other supplies of a textile nature. The shoe and leather goods branch is charged with the repair of shoes, harness, saddlery, and other articles fabricated from leather. The canvas and webbing branch is charged with the repair of tentage, paulins, web equipment upholstery, and other articles made of canvas or web materials. The machinery and metal goods branch is charged with the repair of mechanical equipment, animal-drawn transportation, tools, laundry and bakery equipment, and other supplies fabricated from metal. The miscellaneous branch is charged with the operation of several miscellaneous shops for the repair of band instruments, typewriters, rubber goods, and other supplies not falling definitely into the classes repaired by other branches of the repair division.

SECTION VI

REMOUNT SERVICE

■ 37. GENERAL.—The mission of the remount service is to insure the supply of a sufficient number of horses and mules suitable for military use; to procure horses and mules; to condition and train them and to issue conditioned and trained animals to the using arms as they may be required. The animals procurable upon mobilization must have been

bred in time of peace; for this reason, and because the wartime organization is similar to that in time of peace, the peacetime organization and operation of the remount service is outlined in connection with its organization and functions in time of war.

■ 38. ORGANIZATION.—The remount service consists of the remount branch, supply division, office of The Quartermaster General; remount areas; and remount depots.

a. Remount branch.—The remount branch, which is part of the supply division of the office of The Quartermaster General, supervises all remount operations.

b. Remount areas.—Geographically, the United States is divided into seven areas, each under the supervision of an officer in charge, who with an officer of the Veterinary Corps forms the buying board in that area. The officer in charge of an area is responsible for the efficient operation of the Army horse breeding plan and for the procurement of animals in his area.

c. *Supervision of Army horse breeding plan.*—The supervision of the Army horse breeding plan includes—

(1) Inspecting applicants who wish to act as agents in caring for stallions to determine whether or not the applicants have proper facilities and are reputable citizens in their communities; the obtaining of information as to the type of stallion desired and the number and type of mares to be bred.

(2) Placing of stallions with agents.

(3) Inspecting stallions assigned to agents to determine their care and condition, suitability of their offspring, and to give necessary instructions to agents and owners of mares with reference to the best technique and practices in horse breeding, and care and development of foals up to 4 years of age.

d. Procurement.—The procurement of animals in time of emergency will be by purchase from dealers. It is the policy of the remount service in peacetime to purchase animals from breeders; thus the broker is eliminated and the breeder gets a better price for his stock, which encourages him to breed better animals; and the purchasing officer is able to obtain first-hand information of horse conditions in his area.

e. Remount depots.—(1) *Primary function.*—The primary function of remount depots is to receive, condition, and issue

animals. The conditioning process usually requires not less than 120 days. During this time, the expectation is that the animals go through sickness and recovery; become excellent in health and flesh; become gentled and broken to ride or drive so that when issued to line troops they may be handled and continued in their training without the necessity of the troops spending time in handling sick, unconditioned, and intractable animals.

(2) *Secondary function.*—The secondary purpose of remount depots is to conduct a limited amount of breeding as a means of instructing remount personnel so that they in turn can properly supervise the breeding operations in the various remount areas.

■ 39. EXPANSION AND OPERATIONS UPON MOBILIZATION.—*a. General.*—In event of an emergency, the remount branch becomes a separate division of the office of The Quartermaster General and operates directly under The Quartermaster General. The number of remount areas remains the same, but additional purchasing boards are set up in each area as conditions may demand.

b. Depots.—The three peacetime remount depots continue normal peacetime operations and expand to take care of a proportion of the additional animals purchased. In addition, they conduct schools for training of remount personnel.

(1) *Additional depots.*—Additional remount depots located at San Mateo, California; San Angelo, Texas; Lathrop, Missouri; and Atlanta, Georgia, will be established. These four remount depots will conduct no breeding, but will operate by receiving, conditioning, and issuing animals that have been purchased.

(2) *Issue of animals.*—The issue of animals from these remount depots will be direct to troops or to other remount depots in the zone of the interior and to field remount depots established in the theater of operations.

(3) *Control in zone of the interior.*—The control of animals by the remount service in the zone of the interior ceases when they are issued to troops or to remount depots in the theater of operations. The control of remount activities by The Quartermaster General through the remount division is confined to the zone of the interior.

(4) *Operation in zone of the interior.*—Remount depots in

the zone of the interior will be operated by a remount squadron and such civilian personnel as may be required.

■ 40. THEATER OF OPERATIONS.—*a.* Remount depots in the theater of operations are branch depots and will be controlled in the same manner as other quartermaster depots. When the location and depth of the theater of operations warrant it, there will be established in the communications zone necessary debarkation remount depots, base remount depots, and advance remount depots. Within the combat zone, there will be established remount depots in the army or in the corps as required. All remount depots in the theater of operations will be operated by remount troops.

b. The functions of remount depots in the theater of operations are to receive animals from the zone of the interior and issue them to the using arms and to receive evacuated animals for reconditioning or for further evacuation to remount depots in the zone of the interior.

SECTION VII

MOTORS

■ 41. VEHICLES.—Complete vehicles are classified as class II supplies, organizational allowances of which are prescribed by Tables of Basic Allowances and administrative directives. Vehicles are issued on the basis of approved requisitions and shortage reports submitted by operating organizations. Original equipment issues to complete the basic allowances for existing organizations are made against credits established in quartermaster depots as the result of approved shortage reports. Similar action is taken in furnishing vehicle equipment for activated or newly formed organizations. Replacements for vehicles which become unserviceable are made on approved requisitions originated by the operating organization. Vehicles issued for use may be new equipment procured from the zone of the interior or serviceable reconditioned vehicles overhauled at a quartermaster motor maintenance shop. Replacements required by operating organizations in campaign normally are issued against credits available to the command in designated depots. Organizations and individuals responsible for the handling of motor vehicles must recognize the fact that this equipment is highly technical, comparatively

expensive, and complicated in manufacture. Proper application of prescribed preventive maintenance measures must be a prime consideration in order to minimize replacements. Vehicle equipment of tactical organizations and that of administrative units and reserve pools should be interchangeable wherever possible in order that needed replacements for forward areas may be secured by interorganization transfers to meet emergencies in which the normal channels of supply would introduce delays.

■ 42. OPERATING SUPPLIES.—Gasoline and other fuels and lubricants are classified as class III supplies. Cleaning and preserving materials required for motor transportation are class I supplies. In order to insure mobility, gasoline, other fuels, and lubricants are just as essential as subsistence. Echelonment of these supplies in width and depth must be made to provide for the refilling of all vehicle tanks within the limitations on their radius of operation imposed by the capacity of individual vehicle tanks. Wherever possible, local resources must be exploited to a maximum degree.

■ 43. MAINTENANCE SUPPLIES.—*a. General.*—Although certain repair and replacement supplies which are characterized by high mortality in normal service are class II items, the bulk of motor maintenance requirements are class IV articles and can be supplied only when the organization which has the need furnishes the necessary technical data to permit proper selection of the items from stocks at depots. Tool and machine equipment of field maintenance organizations is in class II. The supply of maintenance items, spare parts, and replacement units is complicated in inverse ratio to the degree to which standardization of the vehicle equipment to be maintained by a given depot or maintenance organization is attained.

b. Stocks.—Stocks of maintenance supplies to be carried by mobile maintenance organizations and by territorial depots and fixed or semifixed maintenance establishments are as directed by the responsible commanders. Balanced stocks must be maintained in all echelons, with replacement stocks made available on requisitions for immediate movement to forward echelons. The time element governing mobility of army, corps, and division maintenance installations also must be considered in prescribing the stock to be maintained

thereat, and these two elements limit the extent of repair operations which may be undertaken in each echelon of maintenance.

■ 44. SALVAGE.—Salvage, reclamation, and reconditioning of unserviceable motor vehicle equipment is an important phase of motor supply which must be developed in any situation to insure minimum demands on the motor maintenance supply system. Crippled motor vehicles incapable of operation or not reparable by immediately available field maintenance equipment usually can be placed in running order by fourth echelon maintenance shops or can become the source of needed parts for the repair of other similar vehicles. Salvage must be intelligently applied, however, and decisions as to disposition made by technically qualified personnel. Inspection and classification of salvaged motor supplies are most important functions of rear echelons since, by proper application of technical judgment, badly damaged vehicles may be used as the source of needed parts without interfering with subsequent repair by rear echelons.

CHAPTER 3

TRANSPORTATION

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SECTION I

RAIL

■ 45. GENERAL.—*a. Control.*—The War Department controls and supervises, through the Quartermaster Corps, the transportation by rail of individuals, troops and their impedimenta, and military supplies. The Quartermaster General, as traffic manager for the War Department, has prepared detailed instructions and directives covering all types of rail transportation. Although these directives and instructions are primarily applicable to rail transportation in the zone of the interior, they are, to a considerable extent, applicable to the theater of operations. The Quartermaster Corps has the same functions and duties with respect to rail transportation in the theater of operations as in the zone of the interior. However, the theater commander will issue orders and directives for the control, supervision, and operation of rail transportation in the theater of operations. Subordinate commanders and regulating stations are control agencies of a commander of a theater of operations; the transportation division of his staff is the supervising agency; and the Corps of Engineers (military railway service) is his operating agency.

b. Authority for travel.—Travel by rail must be authorized by proper authority. The Chief of Staff, The Adjutant General, corps area and department commanders, the commanding general of a GHQ Air Force, and the commanding general of a theater of operations have authority to issue travel orders covering the rail movements of individuals and

troops and their impedimenta. In the zone of the interior, orders issued under this authority must contain a statement showing the procurement authority chargeable with the expense involved. In the theater of operations, the order directing the movement is sufficient.

c. Operation.—The Quartermaster Corps does not operate railway equipment in either the zone of the interior or the theater of operations, except that in the zone of the interior, yard switching at large installations may be accomplished with military equipment at hand. Operation in the zone of the interior is by individual commercial rail lines in cooperation with each other, the military traffic bureaus, the military passenger associations, and the Association of American Railroads. Operation in the theater of operations is under the control of the military railway service of the Corps of Engineers. In forward areas, this service actually operates and maintains the railway equipment while in rear areas, the physical operation may be by the owner lines but under direct control and supervision of the military railway service.

d. Arrangements for rail transportation.—In any rail movement in the zone of the interior, the Quartermaster Corps makes the necessary arrangements for the movement direct with the Military Transportation Bureau of the Association of American Railroads or its local representatives. In the theater of operations, arrangements are made by the Quartermaster Corps with the military railway service of the Corps of Engineers.

e. Rail duties of Quartermaster officers.—Normally, quartermaster transportation officers will be assigned as such and their functions are analagous, both in the zone of the interior and theater of operations, to those of a traffic manager of a large civilian corporation. Quartermaster transportation officers on the staff of a unit commander render assistance to plans and training officers in preparation of troop movement schedules and tables. They act as advisors to the unit commander and members of his staff and his subordinate commanders on rail transportation matters. In the execution of the functions of control, supervision, and regulation of rail transportation in the theater of operations, quartermaster officers have various duties such as those pertaining to a unit or installation transportation officer, railhead officer, regulating officer, and GHQ transportation officer.

■ 46. INDIVIDUALS.—*a. Zone of the interior.*—In general, individuals subject to military jurisdiction are entitled to transportation by rail when traveling on Government business or changing station. Upon presentation to a quartermaster of proper authority for the travel, the quartermaster issues a transportation request to the individual. A transportation request is an order on a railroad for transportation. Upon presentation of a transportation request to the railroad, that railroad furnishes the transportation to the individual named on the face of the transportation request. In view of the fact that blank transportation requests are negotiable, they should be kept under lock and key at all times. The determination as to the routing, kind, and extent of transportation to be furnished under the proper authority and which must be shown on the transportation request, is the responsibility of the quartermaster issuing the request. The details of the kind and amount of rail transportation to which an individual is entitled, in accordance with the provisions of the authority given, are published in current Army Regulations.

b. Theater of operations.—Army Regulations covering the transportation of individuals apply primarily to individual travel in the zone of the interior. However, with a few exceptions, these regulations apply equally to individual travel in the theater of operations. The main difference is that in the theater of operations, travel on Army controlled and operated railroads is on order only, without the necessity of issuing a transportation request.

■ 47. TROOPS.—*a. Zone of the interior.*—The arrangements for the movement of troops and their equipment by rail is a function of the Quartermaster Corps. Although, normally, quartermaster transportation officers will be assigned to all important shipping points and large units, any post, camp, station, or unit quartermaster may be required to perform the duties incident to rail transportation of troops and their impedimenta.

(1) *Responsibility of commanding officer of troops.*—The commanding officer of the troops concerned furnishes the shipping quartermaster data showing the organization, strength in men and animals, entraining and detraining points, number and type of vehicles, tonnage and type of equipment, and an estimate of the ordinary and special rail-

road equipment that is required to effect the movement. He should, together with the shipping quartermaster and the representative of the military transportation bureau, inspect the equipment furnished prior to loading. He should appoint a loading officer and designate loading details from his command who are charged with the expeditious loading of troops and impedimenta. For each separate troop train, he should appoint a train commander who is responsible for the care and conduct of the troops and the safety of impedimenta during the journey.

(2) *Responsibility of shipping quartermaster.*—After receipt of the estimated requirements of equipment, the shipping quartermaster determines the actual kind, type, and amount of rail equipment necessary in accordance with seating allowances, carload minimum weights, and other authorizations as published in current Army Regulations. The regulations authorize pullmans, tourist sleepers, or coaches for personnel; baggage cars for messing facilities; freight cars for impedimenta; and stock cars for animals. The number of each type of car varies with the strength and impedimenta to be moved. The quartermaster takes the necessary action to secure the required equipment and have it spotted when and where desired to insure that the actual movement is made as required. These arrangements are made through The Quartermaster General and the military transportation bureau. After rail equipment is spotted, it is the shipping quartermaster's responsibility to inspect the equipment furnished and determine its serviceability and suitability for the purpose for which intended. He issues transportation requests to cover the movement of personnel and prepares bills of lading to cover shipment of impedimenta. He takes only constructive possession of impedimenta in order to enable him properly to prepare the bill of lading.

(3) *Control.*—Troop movements on special troop trains are controlled by the War Department through The Quartermaster General by means of routings and passing reports. Destination commanders control movements into their areas by means of a destination release, which is a signification that the destination commander can and will receive, unload, and care for the troops and impedimenta concerned at the time stated. Commanders and shipping quartermasters concerned control shipment of small bodies of troops and im-

pedimenta, which can be made by regular train service, in accordance with existing regulations and directives. The railroads control the actual physical operation of troop trains and there is no authority for interference in this operation, in any way, by military personnel.

b. Theater of operations.—In the theater of operations, the shipping quartermaster makes all arrangements for troop movements by rail. In securing equipment and making arrangements for a movement, he deals directly with the military railway service of the Corps of Engineers. Although Army Regulations apply, insofar as practicable, to troop movements in the theater of operations generally, the equipment supplied will be dictated by its availability and the local situation at the time the movement is to be made. Type trains may be used in a theater of operation when practicable. (See FM 101–10.) By type train is meant the standard make-up of a train, which depends on the unit or units to be moved and is based on the use of box cars for men, supplies, and equipment; box or stock cars for animals; flat cars and coal cars for vehicles and guns; a box car for a kitchen car; a coach or box car for officers; and a caboose for railway personnel. Movements are made in accordance with orders directing them and no transportation requests or bills of lading are necessary. Control of movements is exercised by the transportation division of the theater commander's staff. Regulating officers, as direct representatives of the theater commander, control the flow of traffic into and out of the combat zone; between the various areas into which the communications zone may be divided; and from the zone of interior into and out of the theater of operations.

■ 48. SUPPLIES.—*a. General.*—By far the greater portion of the time of a quartermaster rail transportation officer or a quartermaster with rail transportation functions will be devoted to arranging for and shipment of military supplies. The fundamentals applicable to the shipment of supplies are—

(1) Shipments of supplies should not be made until the shipper (consignor) obtains a release from the destination commander (consignee) stating that he can receive and unload, within 48 hours, the supplies in question.

(2) Railroad cars will not be used for storage purposes but

will be released promptly, except in the theater of operations when the tactical situation dictates the advisability of maintaining a rolling reserve.

(3) Car capacities will be used to a maximum. Cars will not be shipped with less than minimum loads except when the urgency of the situation requires. Every effort will be made to load all cars efficiently so that the maximum weight and cubic capacity will be utilized.

(4) Requests for the spotting of cars will not be made until the supplies to be shipped are ready and can be loaded within 48 hours after spotting.

(5) Less than carload lot shipments will be held to a minimum.

(6) All shipments of supplies must be covered by a bill of lading except in the theater of operations where a check list placed in the car may be used.

(7) All supplies will be prepared for shipment so as to arrive at destination in good order; excess packaging or boxing will be avoided.

(8) Government-owned rail equipment will be used to the maximum extent practicable, consistent with the type of supplies to be shipped and the urgency of the situation.

b. Zone of the interior.—In the zone of the interior, arrangements to secure required rail equipment are made with the Military Transportation Bureau of the Association of American Railroads or their representatives and the railroads involved. Shipments are made in accordance with current Army Regulations and with the outline of procedure for shipments of supplies by rail.

c. Theater of operations.—Arrangements for rail equipment will be made with the military railway service of the Corps of Engineers.

SECTION II

WATER

■ 49. PORTS OF EMBARKATION (DEBARKATION).—A port of embarkation or debarkation is an installation (directly under the War Department or commanding general of the theater of operations) so organized as to promote the efficient flow of troops and supplies between ports to or from which transport is necessarily by water traffic. The space occupied by such installations is not for depot storage purposes but primarily

for the temporary storage and transshipment of troops and supplies. Normally, the port is commanded by a general officer of the line. He is provided with a staff composed of representatives of the various arms and services.

a. Commanding officer (port of embarkation).—The port commander is responsible for and has administrative authority over all activities at the port, including casual or concentration camps and animal depots connected therewith when established; the reception, supply, transportation (within the port area), and embarkation and debarkation of troops; the receipt, storage, and transportation (within the port area) of all supplies. He controls the entry and exit of all types of transportation into and out of his port area. Transportation outside his port area is not under his jurisdiction but remains under direct War Department control. He sees that the vessels furnished him are properly fitted out for the purpose for which intended; commands all administrative groups assigned to the port and is responsible for the efficient and economical direction of their operations. The technical services at a port are under the port commander for general administration only, remaining under the direction of their chiefs of branches for technical operation.

b. Port headquarters.—The port headquarters is divided into sections corresponding in general to the various arms and services furnishing personnel for port administration. The quartermaster section is, however, a separate section from that of the Army Transport Service. The chiefs of the various sections act as staff officers to advise and assist the commander in problems peculiar to their respective arms or services. Certain of them also may act as supply officers for their arm or service and furnish the port with the service of their arm or service, such as ordnance, signal, quartermaster, etc. The headquarters includes a port headquarters company. The company consists of a company headquarters and the enlisted men assigned to the various sections of port headquarters. The headquarters company commandant is responsible for the normal military administration, messing, and discipline of the company. He has no control over the technical duties of the enlisted men in their various sections.

c. Quartermaster section, port headquarters.—The port quartermaster heads the quartermaster section. He is

responsible, under the jurisdiction of the port commander, for all quartermaster activities except those of the Army Transport Service. He is on the staff of the port commander and is also responsible for the transshipment of quartermaster supplies through the port and for the providing of the normal station quartermaster services of supply, local transport, and utilities. The quartermaster section is divided into administrative, supply, transportation, and remount divisions. The administrative division is comparable to that of a station quartermaster's office. The supply division is charged with the receipt, care, and transshipment of supplies. It is also responsible for normal quartermaster supply of the port, and an officer of the division is designated as port property officer. The transportation division administers commercial traffic in and out of the port and operates local motor transport. The utilities division administers and operates the port's buildings and utilities. A remount division is provided for supervision of shipment of animals separate from other supplies.

d. Army Transport Service.—The duties of the Army Transport Service come under two general classifications; shore and sea duties. The administrative shore duties of this service for the most part are under the supervision of the port commander, whereas the technical shore duties and the sea duties are under the direct control and supervision of The Quartermaster General. The superintendent of the Army Transport Service at the port serves in a dual capacity. He is on the staff of the port commander for administrative shore duties and is also the direct field representative of The Quartermaster General in Army Transport Service matters. With respect to his shore duties, the superintendent is charged with the control and operation of piers; employment and direction of stevedores; arrangements for mooring, docking, lightering, loading, and discharge of vessels; provisioning of vessels; storage and care of freight received at the pier for shipment; proper stowage and protection for all stevedore gear and hoisting facilities; securing the necessary vessels for the port commander to make shipment as directed by the War Department and any other assistance and advice he may be able to render the port commander to promote the expeditious flow of troops and supplies through the port. The sea duties of the superin-

tendent of Army Transport Service are covered in paragraph 50.

■ 50. TRANSPORT.—The Quartermaster General, under authority of the Secretary of War, is charged with the transportation of the Army by water and is directed to provide, maintain, and have jurisdiction over all vessels required by the War Department except those required for river, harbor, and fortifications work under the Chief of Engineers. The water transportation activities of the Quartermaster Corps are divided into two administrative classes: The Army Transport Service and the Harbor Boat Service. Both services are controlled by the Water Transport Branch of The Quartermaster General's Office; the Army Transport Service direct, and the Harbor Boat Service through the commanders to whom vessels may be assigned and their quartermasters as field agents.

a. The *Harbor Boat Service* consists of all vessels including floating equipment assigned to assist the Army Transport Service, to furnish freight and passenger service in the several corps areas and departments, and the vessels and other floating equipment assigned to the Coast Artillery Corps and the Air Corps.

(1) *Types and operation.*—The vessels used by the Coast Artillery Corps and primarily crewed and operated by coast artillery personnel are tactical vessels, consisting of mine planters, distribution box boats, and motor mine yawls. The vessels used by the Air Corps, crewed and operated by Air Corps personnel, are rescue and retrieving boats for personnel and airplanes. All these vessels are procured, maintained, and supplied by the Quartermaster Corps. All other vessels in the Harbor Boat Service are passenger and cargo types, and are procured, crewed, operated, maintained, and supplied by the Quartermaster Corps.

(2) *Control.*—The laws, rules, and regulations pertaining to the merchant marine of the United States govern so far as they may be applicable to vessels of the Harbor Boat Service and are not in conflict with Army Regulations and orders of the War Department.

b. The *Army Transport Service* is an activity of the Quartermaster Corps, organized for the transportation of personnel and supplies of the Army by water. It is a vital connecting

link with our oversea garrisons and may become a controlling factor in military operations in an oversea campaign.

(1) *Composition.*—This service consists of oceangoing passenger and freight, freight, and animal and freight type vessels; their crews; and the shore establishments at ports necessary to operate, maintain, and provision them. Upon mobilization, any additional vessels required to augment the peacetime strength of the Army Transport Service will be procured by The Quartermaster General from the Maritime Commission except when serious naval opposition is expected, in which case the Navy will transport troops and military supplies to oversea theaters. When naval opposition is expected, the vessels of the Army Transport Service may be turned over to the Navy, which then is charged with the procurement of necessary additional vessels from the Maritime Commission, and the operation, maintenance, provisioning, and fitting of all these vessels. Procurement of vessels by the Army from or through the Maritime Commission may be by transfer, purchase, requisition, time charter, or bare boat charter. Some commercial vessels, by reason of subsidies, have been built especially for use as troop transports requiring little alteration. However, the average commercial liner requires considerable alteration and additional fittings to prepare it for suitable troop transportation. Usually alterations must be made to provide for the following:

(*a*) Additional bunk space and bunks. (A maximum proportion of hull for troop berthing space.)

(*b*) Additional ventilation.

(*c*) Deck space for exercise and recreation.

(*d*) Additional troop galleys (messing facilities).

(*e*) Additional and convenient bathing and sanitary facilities.

(*f*) For animals; stalls, ramps, and special appliances for handling, watering, feeding, and caring.

(2) *Control.*—Movements of vessels and water transportation of troops and cargo are controlled by the Water Transport Branch, office of The Quartermaster General. This branch is the coordinating agency which prepares the transport schedules and assigns vessels to the various transport tasks in accordance with requirements determined by the War Department General Staff. Operating sections of the Army Trans-

port Service at ports carry on the actual operation of the service, including the assignment of space aboard ships.

(3) *Organization.*—On a transport, there are three main general classifications of functions; military, administrative, and ship operation.

(*a*) *Military.*—A commanding officer of troops is assigned to each transport either permanently or by trip and he assumes command of all military personnel on board. He is responsible for the care and conduct of troops, and insures that they comply with all Army Regulations and ship regulations while on board. He deals with all purely military matters and has no control over the operation of the vessel or the vessel's crew. In all cases requiring disciplinary or other measures involving members of the crew and in the inspection of the ship and ship's police, he deals with the master of the vessel.

(*b*) *Administrative.*—A transport quartermaster or quartermaster agent, with necessary subordinate personnel, is assigned to each transport and is the representative of the Army Transport Service, performing all administrative duties and functions pertaining to the Quartermaster Corps on board ship except those assigned to the master.

(*c*) *Ship operation.*—The master is in supreme command of the ship and commands all persons on board (crew) who sign the ship's articles. He is responsible for and has full and paramount control of the technical operation, navigation, and safety of the ship; the safe delivery of passengers and cargo at destination; the discipline and efficiency of the crew; and the inspection of the ship and ship's police.

(4) *Loading of transports (embarkation).*—(*a*) *Types.*

1. Commercial.—This method of loading utilizes the ship's space to maximum capacity. It applies to movements between established and well-secured ports when no naval opposition is to be expected and it is not necessary that troops and impedimenta be immediately available for tactical employment upon landing.

2. Unit.

(a) *Combat.*—In this method, certain units with their necessary impedimenta and transportation are completely loaded in a single transport to facilitate their making a forced

landing or be immediately available for tactical employment upon debarking. They must be loaded to facilitate simultaneous debarking of troops, impedimenta, and supplies into small boats or on piers; and to maintain the tactical integrity of the units at all times and in the inverse order in which it is desired that they be debarked.

(b) *Organizational.*—This is a method of loading in which organizations with their impedimenta and transportation are loaded in a single transport but not so as to allow debarkation of troops' impedimenta and equipment simultaneously. This method is more economical in ship space than combat unit loading. It maintains tactical integrity and permits tactical employment of organizations as soon as troops and equipment are unloaded but does not permit the utilization of the organizations for forced landings.

(c) *Convoy.*—This is a method of loading troops' impedimenta and transportation in transports of the same convoy but not necessarily in the same ship. It is used after beach heads are established and when it is not necessary to utilize the organizations for tactical employment until sometime after they are debarked and assembled.

3. Combination.—An expedition into hostile territory may require a landing on a hostile shore, securing of a beach head and an advance, in which case an oversea force may be transported in a convoy composed of combat unit loaded, organizational unit loaded, and commercial loaded transports. This is combination loading. The number of transports for each type loading must be very carefully determined in accordance with the specific mission and objective of the force as a whole.

(*b*) *Procedure.*—The following is the normal procedure in embarkation of troops on transports:

1. The War Department determines the force to be

embarked, its port of embarkation, destination and mission, and issues orders to the troop and port commanders concerned. The Quartermaster General issues sailing orders for all ships to conform.

2. The commanding officer of the port of embarkation publishes an embarkation schedule based on loading and stowage plans submitted to him by the commanding officer of troops. The loading plans are prepared by the commanding officer of troops with the advice and assistance of the Army Transport Service. Prior to preparation of loading plans, the commanding officer of troops must determine the type of loading; number of men and animals; weights and measurements of impedimenta and transportation; and the desired schedule of debarkation. Normally, the Army Transport Service furnishes the commanding officer of troops with information concerning the number, type, and location of ships available together with a plan of each ship. In addition, it furnishes data as to loading facilities and limiting factors of capacities and methods of stowage.
3. The commanding officer of troops issues an embarkation order on the basis of the prepared embarkation schedule. This embarkation order contains directives as to the order of loading of units, date and hour of embarkation for each unit, assignment of supervising officers, guards, and other incidental details determined upon by the port commander, the superintendent of Army Transport Service, and the commanding officer of troops to insure expeditious loading.
4. At the prescribed time, troops are marched to piers where inspection and necessary checks are made. The first relief of the guard for the transport is then marched on board and posted. The animals, guns, carriages, transportation and other property are turned over to loading details and the command is then marched on board, each unit being conducted to its assigned quarters by an officer. Equipment and transportation

may be loaded prior to troops if more convenient, and may be loaded either by soldier details or civilian stevedores (or a port battalion in a theater of operations).

(5) *Unloading of transports (debarkation).*—Prior to debarkation, debarkation orders are issued following a similar procedure as for embarkation orders and these provide for the orderly and expeditious debarkation usually in the inverse order of embarkation. The debarkation order is included in a combat order where a forced landing is to be made.

c. Inland waterways.—(1) *Zone of the interior.*—In the zone of the interior, transportation on inland waterways is operated by private ownership, except where Government-owned, and arrangements for use of the waterways are made by the Quartermaster Corps in a similar manner as for rail transportation.

(2) *Theater of operations.*—In the theater of operations, transportation on inland waterways is operated by the Corps of Engineers and arrangements for their use are made by the Quartermaster Corps in a similar manner as for rail transportation with the military railway service. This type of transportation, when available, should be utilized to the maximum consistent with other military factors in order to relieve the burden on the rail and motor systems.

SECTION III

MOTOR

■ 51. GENERAL.—Motor transport is an important component of an organized transportation system made available to a commander to afford freedom of action, both in accomplishing the requisite movement of supplies and in affording means of rapid maneuver of combat elements. Of all methods of transportation capable of handling the vast quantities of supplies involved, motor transport is the most flexible, permitting maneuver of troops and supplies in any direction at the will of the commander. However, wherever possible, motor transport should be employed as an auxiliary means extending rather than replacing the rail and water facilities. For continuous operation, motor transport requires well constructed roads, and yet it is most destructive of those roads, thus materially increasing the labor and materials required for

road construction and maintenance. Personnel required for motor transport operation, on a ton-mile basis, is many times that required in rail operation. Motor transport cannot be operated efficiently at the low speed of marching troops and must either use parallel routes or be restricted to specified periods of time on congested roads. The adoption and availability of all wheel and multiple wheel drive vehicles have provided motor transport capable of cross-country mobility. The limitations imposed on speed and performance and the great wear and tear resulting to equipment under these conditions must, however, be carefully considered by commanders before extensive cross-country operations are directed. Continual operation must be supported by adequate maintenance and supervised by comprehensive inspection, both command and technical.

■ 52. EMPLOYMENT.—Two methods of employing motor vehicles are in general use as follows:

a. Assignment.—This method assigns a vehicle or a group of vehicles to one user, and as a result their services are not available to others during the entire period of such assignment. It is used primarily for organic transport and combat vehicles of organizations and is the normal method of employment applicable to units such as a company, battery, or troop, or when the work to be performed requires special vehicle characteristics.

b. Pooling.—In this method, a central agency is created through which motor vehicles are dispatched to perform a designated task or tasks. It permits the working of one or more vehicles on one or more jobs, and by proper planning provides maximum loads and economizes hauling mileage, thereby avoiding waste effort. It is applicable to command groups which require services of motor transport beyond the capacity of organic equipment in the hands of individual units and is particularly useful in the operation of general purpose transport.

■ 53. ORGANIZATION.—Motor transport is a utility available for meeting the service needs of all arms. Economy of available motor equipment demands that organically assigned general purpose vehicle equipment, as distinguished from combat vehicles, be limited in lower echelons of command to the least required for normal "housekeeping" pur-

poses, with such additional vehicles as are determined to be necessary by command decision to meet a general situation operated in pools to meet peak demands or perform special missions. The actual need of a unit for motor transport services above its normal requirements is dependent on many factors, including the mission of the command, the length of haul, the kind and condition of the road net, and expected developments in the tactical or strategical situation. No situation can be considered as an average situation, and usually no two situations have the same requirements, but each must be provided for by command action. The organization of motor transport must, therefore, be flexible and adaptable to operation in a vast variety of unit combinations. The successful accomplishment of the mission of motor transport depends on proper vehicle performance.

■ 54. PERFORMANCE.—The combination of the operator's ability and the mechanical condition of the individual vehicle are important factors in a mass motor movement. Inexperienced, careless, or poorly trained operators, or condition of vehicles as a result of vehicle age or deferred maintenance, or a combination of these factors, can upset all plans for successful completion of an assigned task. Consequently, the operating officer must know the actual limitations of his personnel and vehicles. Personnel performance depends on degree of mechanical skill, health, fatigue, and morale. Vehicle performance differs considerably under varying conditions of actual field operations. Speed, types of fuel and oil, overloading, and terrain conditions, all affect performance. Since continuous operation depends on proper maintenance, the motor transport organization chosen must provide balanced maintenance facilities along with the operating units assigned in accordance with the mechanical condition of the vehicles, the difficulties expected in the operation, and the availability of replacement or relief equipment. Operation directives must consider the maintenance requirements and must be executed by coordinated administration with due observance of technical requirements. Successful use of the maximum potential service from motor transport, therefore, requires administration of both operation and maintenance by a command group competent to make decisions based on technical and personnel conditions.

■ 55. ADMINISTRATION.—The functions of the administrative echelon include direction of the tactical employment of the operating units, the technical inspection thereof, the management of the actual operations and the resulting maintenance, and the supply of equipment, operating supplies, and maintenance materials. In any command group, the commanding officer is the authority who directs the character of load, time and place of loading, destination, and priority of the movement. The commander of the motor transport units to which the mission is assigned is responsible for the actions required to carry out the transport services directed. Technical considerations dictate that a minimum of limitations be placed on the manner in which the motor transport commander disposes of the equipment available to him in performing the mission.

■ 56. OPERATION.—The motor transport pool within a command group does not necessitate the physical grouping in one place of the transport elements comprising the pool. Pooling is effected by placing motor transport elements under the control and direction of a single authority usually in the administrative echelon referred to in paragraph 55. The various elements should be dispersed throughout the area in accordance with the necessity for their use. Billeting of operating units should place them in proximity to the area in which they are to be used. Adequate communication must be provided, preferably by telephone, between control and subordinate elements. The means provided for the control and use of motor transport must insure sufficient elasticity to meet any situation. Normally, the pool will function in its sector as a utility in the movement of specific troop units and cargo tonnage between stated terminals and under priorities determined each day by the proper commander. Occasionally, when the situation affecting a subordinate unit cannot be foreseen, especially during an advance, motor transport units may be attached temporarily to the unit for the duration of a specific operation. Under special conditions, it may become necessary for motor transport to assume the characteristics of rail transport, operating over fixed routes on prearranged schedules for extended periods of time. This type of operation requires rigid technical administrative control.

■ 57. MAINTENANCE.—The maintenance and operation of motor transport are such closely related functions that satisfactory supervision of either one cannot be attained without control of the other. Maintenance must start with the individual vehicle operator and be followed by supervisory inspection to determine its adequacy or the necessity for further corrective measures. Maintenance is divided into four echelons. While a strict delineation of the scope of each is impracticable, the class of work performed by each echelon is limited by such factors as tools, supplies and time available, and the degree of training of personnel. The principal dividing line between the different echelons is one of responsibility. Briefly, these four echelons are as follows:

a. First echelon.—First echelon maintenance is that care given to a vehicle by the operator within his ability with the equipment available to him. It is a responsibility of the individual driver.

b. Second echelon.—Second echelon maintenance is that preventive maintenance, minor repairs and adjustments performed by the organization to which the vehicle is assigned, and includes the function of inspection. It is the responsibility of the commander of the operating organization.

c. Third echelon.—Third echelon maintenance is that repair which can be performed by mobile maintenance organizations within the limitations of their equipment and available replacement units and parts, and within a time limit which will not detract from complete mobility. Third echelon repair is primarily unit part replacement, supplemented by repairs and adjustments which do not require extensive dismantling of a vehicle or its components. It includes the technical inspection of vehicles in organizations served by the maintenance organizations, the evacuation of work which is beyond the capabilities of the mobile shop unit to the fixed or semifixed fourth echelon installations, and the furnishing of maintenance supplies to operating units. Responsibility for the third and fourth echelons rests upon the supply arm or service (Quartermaster Corps and Ordnance Department).

d. Fourth echelon.—Fourth echelon maintenance is that repair, overhaul, and reconstruction work which requires technically trained personnel, specialized shop equipment, supplies, and time beyond the limitations of the third echelon maintenance organizations. Fourth echelon repair in-

cludes the comprehensive overhaul or rebuilding work necessary to recondition unit assemblies removed by third echelon shops and complete vehicles evacuated from lower echelons. It is generally performed at fixed or semifixed shop installations established in conjunction with units and parts supply depots and equipped with heavy machine equipment and comprehensive tooling.

■ 58. PERSONNEL.—The skill and ability of personnel operating a motor column have a direct and vital bearing upon the efficiency of a column and its vehicles. Trained personnel is a prerequisite of mass motor transportation. The personnel necessary for motor transportation may be divided into three general groups—the control group, the operating group, and the maintenance group. The first group consists of the senior as train commander with a staff and guides, and traffic control men, preferably mounted on motorcycles. The second group is composed of the vehicle drivers and their assistants. The third group comprises the "trouble shooters" and repairmen. Personnel of these groups may be members of the companies in the column or of independent units attached to the march column. Drivers must be selected for dependability, alertness, and physical ability. The effectiveness of motor transport can be influenced more by the drivers than by any other factor. Inefficient drivers increase difficulties of operations and hasten the need for repair; well-trained, capable, and willing drivers reduce these troubles. It is essential, if vehicles are to receive proper care, that each vehicle have a definitely assigned driver.

■ 59. CIRCULATION AND TRAFFIC.—See FM 25–10.

SECTION IV

ANIMAL

■ 60. GENERAL.—Animal transportation is divided into wagon and pack. No wagon and only a few pack units are provided for in our present initial mobilization plans, as it is contemplated that animal transportation will be used only in situations where the use of motor transportation is impracticable or less economical. If the immediate need for animal transportation becomes apparent, some may be organized during the initial mobilization; otherwise, it will probably be organized later.

■ 61. WAGON TRANSPORTATION.—*a. Advantages.*—Wagon transportation has the following advantages:

(1) It can travel over terrain impracticable for motor transportation.

(2) The capacity of a wagon is comparable to that of a light truck and equal to the pay loads that can be transported on at least 12 pack animals.

(3) Maintenance of a wagon is relatively simple.

(4) Its animals can sometimes live off the country.

b. Disadvantages.—The following disadvantages restrict its use:

(1) It is slow, moving at 3½ or less miles per hour.

(2) Its daily marches are limited to about one-eighth of the distance which motor transportation can travel.

(3) The forage requirements of its animals (amounting to about 100 pounds daily for the four animals per wagon) when it must be carried on vehicles, materially reduces the pay load of the other cargo that can be carried, especially on trips extending several days' distance from the supply base.

(4) Forage requirements, when grazing is impracticable, necessitate voluminous and frequent replenishments, and the animals require laborious care even when the transportation is idle.

(5) During active campaign, animals soon become unserviceable as a result of one or a combination of the following: insufficient water or forage, excessive marching, or neglect due to inexperienced or careless personnel.

c. Employment.—Wagon transportation will be employed only to meet the needs of special situations, some of which are listed below.

(1) Over terrain affording few or no roads suitable for motor transportation, including—

(*a*) Long distances entirely impracticable for motor transportation.

(*b*) Short distances in extension of routes practicable for motor transportation.

(*c*) Short distances paralleling and supplementing routes practicable for motor transportation which are being used to their capacity by such transportation; for example, in a concentrated area where mass motor movements of troops and supplies in preparation for an offensive are in progress on all available motor roads.

(2) Over terrain temporarily impassable for motor transportation as a result of—

(*a*) Rainy weather.

(*b*) Artillery shell holes, aerial bomb pits, etc.

(3) In theaters of operations where the use of wagon transportation would be more economical than the use of motor transportation, because of—

(*a*) Abundant local resources of animals, wagons, and forage.

(*b*) Hostile interference by sea, air, or land, making replenishment of motor fuel and parts difficult.

(4) In other situations where motor transportation is not available and idle wagon transportation can accomplish the tasks.

(5) At remount depots.

■ 62. PACK TRANSPORTATION.—*a. Advantages.*—(1) The principal advantage of pack transportation, and usually the sole reason for its existence, is that it can traverse terrain impassable for vehicular transportation including both motor and wagon.

(2) Animals sometimes can live off the country.

(3) In certain situations, because of the small silhouette of its animals and the dispersive capabilities of its organization, pack transportation is less vulnerable than vehicular transportation.

b. Disadvantages.—(1) The forage requirements of its animals, when forage must be carried by the animals, reduces their pay loads of other cargo so much as to make pack transportation very uneconomical.

(2) It is slow, moving 4½ to 5 miles per hour.

(3) It has other disadvantages inherent in animal transportation as mentioned in paragraph 61.

c. Employment.—(1) Pack transportation should be employed in situations where the use of vehicular transport is impracticable, some examples of which are listed below:

(*a*) In mountainous or jungle country and on narrow trails.

(*b*) In connection with the cross-country supply of troops in combat, especially over shell-torn or difficult terrain impassable for vehicular transportation.

(*c*) Over terrain temporarily impassable for vehicular transportation as a result of rainy weather.

(2) The employment of pack transportation usually anticipates the dire need for supplies by troops who cannot be reached by any other means of transportation. In such cases, excessive distances, night travel, extreme privation, and any other difficulties that can be overcome by determined effort should not be permitted to deter pack transportation from reaching its march objective by the time specified. The most economical use of pack transportation, however, is for short distances, beyond the routes practicable for vehicular transportation, where the round trip for the pack animals is not over a day's march.

■ 63. ANIMAL CASUALTIES.—*a. Treatment.*—In camp, animal casualties are examined and treated at veterinary dispensaries. On the march, veterinary personnel are distributed throughout the column so that they can promptly detect and examine casualties, give them necessary treatment, and determine the dispositions to be made of them.

b. Evacuation.—Severe casualties which are unable to walk are collected in ambulances and evacuated to the nearest evacuation hospital. Other casualties which are able to walk are evacuated by marching or by rail in the stock cars used to bring forward animal replacements.

■ 64. ANIMAL REPLACEMENT.—*a.* The system of animal replacement must insure the timely arrival of animals when and where needed.

b. Establishments for handling animal replacements are echeloned in depth. They include the corps remount depot when the corps is acting independently, army remount depots, and such other base and advanced remount depots in the communications zone as may be necessary.

c. Animal replacements are forwarded to units by rail, motor, or water transportation, or by marching; movement beyond railheads normally is executed by marching.

SECTION V

AIR

■ 65. GENERAL.—*a.* Paralleling civilian development, air transportation will play an increasingly important part in military administration and operations. Air transportation

will be utilized, when it is available and more practicable than other means of transportation, for the movement of passengers (personnel), baggage, equipment, supplies, and mail.

b. A prediction can safely be made, however, that there will never be on hand sufficient air transportation for all of the uses that could be made of it during active operations, if it were available. Furthermore, priorities of the Air Corps, for use of air transportation for necessary movements of its own personnel, equipment, and supplies will often restrict the use of such transportation for other purposes, except in special, urgent cases.

■ 66. ADVANTAGES AND DISADVANTAGES. — *a. Advantages.* — Among the advantages afforded by air transportation are—

(1) Speed.

(2) Independence of terrain, except for taking off and landing.

(3) Relative freedom from interference by hostile ground troops, except antiaircraft artillery which it frequently can avoid.

(4) Ability to concentrate rapidly.

b. Disadvantages.—Some of the disadvantages are—

(1) Initial expense and cost of operation.

(2) Operations sometimes delayed or prevented by unfavorable weather conditions.

(3) Employment on missions for the Air Corps itself will preclude the use of military air transportation for other purposes except in special cases.

(4) Dependence on suitable landing fields, ground installations, transportation, labor, etc., which may not be available at desired destination.

(5) Restricted carrying capacity of most air transportation.

(6) Vulnerability to air attack.

■ 67. EMPLOYMENT.—*a. Restrictions.*—A few of the restrictions governing air travel and air shipments, except during active operations, are summarized below:

(1) *Passenger.*—(*a*) Travel by personnel of the United States Government in commercial aircraft at public expense is allowed when authorized by competent authority.

(*b*) Travel by military and certain other Government personnel in military aircraft is permitted only in accordance with Army Regulations.

(2) *Supplies and material.*—(*a*) Under normal conditions, shipments of supplies and material are not made by commercial air express.

(*b*) When urgency and necessity require shipment by commercial air express, application, duly certified by the local commanding officer, is made to The Quartermaster General for authority. After authority has been granted, a bill of lading is issued upon which is shown the authority for the shipment. A copy of the authority is furnished the disbursing officer paying the transportation account.

(3) *Baggage.*—The baggage of persons authorized to travel by commercial aircraft is limited to the free allowance permitted by the carrier. Excess baggage charges at Government expense are prohibited.

(4) *Mail.*—The prescribed air mail postage must be paid on all official mail.

b. During active operations.—During active operations, the quartermaster may sometimes utilize air transportation when it is or can be made available and is the most practicable or in some cases the only kind of transportation which will meet the needs of the particular situation. Some examples are—

(1) Transportation of class I supplies from an air base airdrome to the distributing points operated at its various auxiliary airdromes and landing fields. (See ch. 6, sec. III.)

(2) Transportation of essential quantities of urgently needed quartermaster supplies, such as—

(*a*) Transportation to landing fields convenient to units isolated by the enemy or the terrain from other means of supply.

(*b*) Transportation and delivery by parachute to isolated units located where the landing of aircraft would be impracticable.

(*c*) Transportation of supplies to meet any other emergency.

(3) Reconnaissance flights in connection with—

(*a*) Locations of establishments.

(*b*) Routes for movements.

(*c*) Control of supply convoys or troop movements.

(4) Delivery of urgent messages when no other suitable means of communication is available.

(5) Transportation of personnel.

CHAPTER 4

CONSTRUCTION

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SECTION I

GENERAL

■ 68. DEFINITION.—Construction, as referred to in this section, is the fabrication and assembly, from component materials and parts, of buildings and structures required for the furtherance of the War Department's mission except those that are classed as utilities or form a part of utilities systems.

■ 69. CLASSES.—*a.* Initially, during mobilization, construction will be of the lighter types; for example, cantonments, hospitals, and remount depots.

b. Later, the heavier types will predominate, such as depots, ports of embarkation, storage projects, arsenals, proving grounds, airdromes, and bag loading plants.

■ 70. RESPONSIBILITY.—*a.* The Quartermaster General, under authority of the Secretary of War, is charged with the construction of buildings, structures, and utilities (other than fortifications) connected with the Army in the zone of the interior. He supervises directly all such construction planning and construction operations. Construction in the theater of operations is a function of the Corps of Engineers.

b. During mobilization, corps area commanders are authorized only to initiate and control construction of tent floors, kitchens, messes, and sanitary facilities. Additional construction projects require authorization by the Secretary of War.

■ 71. FUNCTIONS.—The Quartermaster General's construction functions include—

a. Computation of data for inclusion in the budget estimates for the Congress on new construction and execution of all approved projects for new construction.

b. Supervision of repair and maintenance matters incident to upkeep of Army posts, camps, and stations, including estimates for and control of funds and all matters relative to fuel and power requirements (except procurement).

c. Control, supervision, and coordination of all matters pertaining to real estate under War Department control, including maintenance of maps and records of such property.

d. Investigations and reports on all legal questions pertaining to contracts, handling claims, and adjustments arising out of contracts, and administrative examination of all construction contracts and contractual matters.

e. Administration of civilian personnel.

f. Regulation and adjustment of differences involving wages, employment, and allied subjects.

■ 72. METHODS AND CONTROL.—*a.* The Quartermaster General exercises close control of construction and related activities. This is necessary in order to comply with the stringent requirements of existing legislation and regulations relative to the handling of appropriations, wages and hours, plans and specifications.

b. Constructing quartermasters who are assigned to projects are appointed by the Secretary of War upon recommendation of The Quartermaster General. These officers report direct to The Quartermaster General and are exempted from the control of corps area, department, post, and station commanders with respect to construction activities. They act under special instructions concerning the detailed and specific duties applicable to each project.

c. New construction projects ordinarily are contracted for as complete units with a prime contractor when a reliable construction organization can be contacted to perform the complete service. Such contracts are usually let on a lump sum or unit price basis. When specifically authorized, however, through acts of Congress or otherwise, cost plus or adjusted compensation contracts may be resorted to in special cases and their use will probably be necessary for many emergency projects. It is frequently necessary to undertake work on some projects wherein the constructing quartermaster is in effect the prime contractor. When this occurs, he hires the labor and lets separate contracts for necessary materials. These projects are known as "purchase of materials and hire

of labor" contracts. Such construction may be necessary due to remote locations, limited funds, default of former contractors, etc.

■ 73. DESIGN OF BUILDINGS.—*a.* The proper design of buildings is dependent upon a number of factors which vary in each case, and certain fundamental factors must be determined before the design of a building can be undertaken. The preparation of plans and specifications for either permanent or temporary buildings is a task for skilled architects and engineers.

b. Buildings intended for emergencies are usually built for temporary use, with prime consideration only to utility, economy, and speed of construction. Their salvage value (and sometimes their portability) are important but not governing factors. So far as practicable, designs and bills of material are prepared in advance of an emergency and arrangements made for their prompt production and distribution as needed. Drawings of mobilization types have been prepared by The Quartermaster General and have been furnished corps area commanders and procurement planning officers.

■ 74. SELECTION OF SITES.—*a.* Although the applicable fundamentals vary, in practically every case they are based on a combination of military, engineering, and sanitary considerations. Those mentioned herein apply particularly to installations serving purely military purposes (cantonments, hospitals, remount depots, etc.) as distinguished from those of an industrial nature (depots, arsenals, terminals, ports of embarkation, bag loading plants, factories, etc.).

b. Preference should be given, in the order named, to property owned or leased by the United States and controlled by the War Department; State-owned or controlled property used for military purposes; and property that can be leased for 1 or 2 years with option of renewal from year to year for about 5 years.

c. Sites should be suitable and adequate and should permit reasonable expansion.

d. The division of a command among two or more sites necessitates the sites to be located so as to facilitate supply from a central point and administration and training of the command from its headquarters.

■ 75. CAMP LAY-OUTS.—Camps are military installations for the shelter of personnel consisting principally or entirely of tents. They may be mobile or fixed and if fixed, may include some buildings, either temporary, semipermanent, or permanent.

■ 76. CANTONMENT LAY-OUTS.—*a.* Cantonments are military installations for the shelter of personnel, together with their animals, equipment, equipage, and supplies, and consisting principally or entirely of semipermanent buildings suitably arranged with relation to each other. Cantonments frequently are referred to as "camps."

b. Lay-outs for cantonments are of two general types, known as the straight line and U-shaped. The U-shaped lay-out is a modification of the straight line lay-out. In either case, the "backbone" of the lay-out is the main traffic road with secondary roads running parallel to it. If the main traffic road is approximately straight, the lay-out is of the straight line type, but if the main traffic road bends back upon itself, it is called the U-shaped lay-out. The parade ground (central open space) lies on one side of the straight line lay-out, but is in the center of the U-shaped lay-out.

■ 77. MAPS.—The following maps should be maintained at military posts, camps, and stations: Real estate maps, reservation maps, post and camp maps, and utilities maps.

a. Real estate maps.—A copy of the map of the land at each post, arsenal, depot, or other station should be carefully preserved in the office of the commanding officer thereof. Any changes affecting this map are immediately noted thereon and a report made to The Quartermaster General. Application should be made to The Quartermaster General for the maps necessary to comply with this requirement.

b. Reservation maps.—These are required when the reservations are materially larger than the built-up areas within them. In addition to the boundaries and topography, they show essential natural and man-made features including buildings, fences, ditches, sea walls, jetties, wharves, and utilities. This information is complementary to post and camp maps, utilities maps, and historical records. Each building and structure shown which does not appear on the more detailed post and camp maps should bear an identifying number.

c. Post and camp maps.—These show the portion of the reservation in which the bulk of the buildings and utilities are located and if the reservation is small, they may also serve as reservation maps. They are usually topographic maps and their construction is governed by the same rules as for reservation maps, except that they are drawn to a larger scale and contain more detailed information. If necessary, they may be constructed in units, the several units being assembled into a post or camp atlas provided with a key map. Each building or structure should be identified by its proper number which should correspond to that used in the historical record of the post or camp. Utilities may be shown on the post or camp map, on a separate utilities map, or on both.

d. Utilities maps.—These must be prepared when all necessary information regarding utilities is not included in other maps. As in the case of post and camp maps, utilities maps may be constructed in units to form an atlas. Topography is desirable, but if omitted the elevations of underground installations should be referred to the datum plane of the map.

e. Topographic maps.—These may be reservation, post, camp, or utilities maps and should be of such size and have such contour intervals best to serve the purpose for which intended. Where great accuracy is required, a transit should be used for lines, a level and rod for elevations, and tape for distances. Reading should be made to the nearest tenth of a foot. Contours are located by interpolation between known elevations. When maps are used for the development of building lay-outs or utilities, the topography should be drawn on the back of the tracing where it will be undisturbed by changes and additions made on the other side.

■ 78. SUPERINTENDENCE OF A PROJECT.—*a.* It is difficult to formulate rules for the direction of building construction that are applicable to all cases. Each problem must be considered separately and a system of inspection decided upon to suit each particular portion of the work. Every detail must be supervised and all work and materials inspected as the work progresses. Errors and defects should be detected at the time they occur or before they are so incorporated in

the work that it is difficult to remedy them or make replacements.

b. The quartermaster charged with construction should make frequent visits to the job and inspect all work at each visit. He should note the condition of all work and, if not properly done, give the necessary orders for its correction. On subsequent visits, he should note if his instructions have been carried out. He should check the rate of progress of the work, and if there are delays, he should warn contractors of the penalty involved if the work is not completed on the date stated in the contract. He should not hesitate to order the removal of inferior workmanship or material even when incorporated in the structure. Specifications are the basis of quality of material, work and manner of performance, and they normally govern the execution of the project.

c. The quartermaster charged with construction should never use snap judgment on any matter concerning the work. He should weigh all questions carefully and consult the superintendent of construction when necessary, so that when his decisions are made they will be final. He should be absolutely impartial in his decisions, keeping constantly in mind that, as he is the representative of the United States, they must be fair to both parties as required by the contract and that they must have legality to be upheld by higher authority or by the courts. Contractors must not be required to do more than the plans and specifications provide.

SECTION II

REAL ESTATE

■ 79. DEFINITION.—The term "real estate" as used in connection with the activities of the War Department includes land; buildings, piers, docks, or wharves; office and storage space; rights-of-way or easements, whether temporary or permanent; and any interests which may be acquired or held therein for the use or benefit of the United States by the Army or any branch thereof.

■ 80. DUTIES OF THE QUARTERMASTER CORPS.—The Quartermaster Corps is charged with the execution of the administrative details in connection with the acquisition and disposal of all real estate; cancellation, extension, or modification of all leases; granting and renewing of temporary rights

to other Government departments or persons for the use of real estate; settlement of all claims arising from the use and occupancy of real estate.

■ 81. ACQUISITION BY PURCHASE.—Any officer desiring to initiate steps for the acquisition of real estate must forward his recommendation, through military channels, to The Quartermaster General. The method of acquisition will be prescribed in each case.

■ 82. ACQUISITION BY LEASE.—Original leasing of premises and renewals must be advertised for bids pursuant to section 3709, Revised Statutes (14 Comp. Gen. 769). In the absence of formal advertising, it must be shown how it was determined that suitable premises at a lower rental were not available.

a. Request for authority to lease.—An officer or other agency of the War Department requiring the temporary use of any real estate makes a written request therefor. If heat, light, water, and other services are necessary, they must be furnished by the lessor when not otherwise obtainable at a lower cost, and the rental agreed upon must include in the lease a statement of the services to be furnished.

b. Leases not requiring prior approval.—The leasing of camp sites, office and storage space, garage space, and space for recruiting stations, buildings, and grounds required in connection with maneuvers and special field exercises, including the GHQ Air Force, are authorized without prior approval when funds are available, provided the premises will not be occupied longer than 3 months and the rental for the entire term is less than $500. Further details in this connection are given in FM 10–10.

c. Emergencies.—In emergencies, a radio request for authority to lease may be made direct to The Quartermaster General.

d. Leases to cover fiscal year.—Leases are not executed to cover portions of 2 fiscal years, except when specifically authorized.

e. Renewals.—Requests for authority to renew an existing lease containing a renewal privilege are made to The Quartermaster General, through military channels, in sufficient time to permit the completion of action before the expiration of

lease. Compliance with requirements stated in paragraph 82 is necessary for new leases as well as renewals.

f. Effective date.—Original leases must take effect on the date the premises are first occupied. Possession of the premises may be taken upon receipt of approval of request for authority to lease.

g. Option of renewal.—The limit for option of renewal should be the longest time, compatible with the interest of the Government, to which the lessor will agree.

■ 83. SURVEY OF PREMISES.—A careful survey, detailed examination, and written record of conditions found must be made of any premises when possession is taken and also upon relinquishment. These surveys and record must be made with great care because they form the basis for the defense of the United States against any claim arising out of the use and occupancy of the premises. Upon vacation of the premises, a release should, if possible, be obtained from the lessor.

■ 84. PROPERTY NO LONGER NEEDED FOR MILITARY PURPOSES.—When a determination has been made that real estate or interests therein are no longer required for the use of the occupying or controlling agency, that fact must be reported to The Quartermaster General.

■ 85. DISPOSAL OF PERMANENT GOVERNMENT BUILDINGS OR IMPROVEMENTS.—When permanent buildings or improvements become unsuitable or unserviceable they will be entered on an inventory and inspection report and brought before an inspector for his action.

■ 86. SALVAGE OF TEMPORARY GOVERNMENT BUILDINGS OR IMPROVEMENTS.—Corps area commanders are authorized to approve requests from stations under their jurisdiction for the salvage of temporary buildings or improvements. In cases of exempted stations, requests for such salvage must be submitted for approval to the chief of arm or service concerned.

■ 87. SALE OF TEMPORARY GOVERNMENT BUILDINGS OR IMPROVEMENTS.—When it is desired to dispose of temporary buildings or improvements by sale, the recommendation of the agency occupying them is submitted to The Quartermaster General through military channels.

■ 88. TEMPORARY USE BY PRIVATE INTERESTS.—All requests for the temporary use by private interests of War Department real

estate or interests therein are transmitted to The Quartermaster General, through military channels, with the recommendation of the controlling agency.

■ 89. CLAIMS FOR DAMAGES.—All claims for damages arising out of the use and occupancy of real estate by the Army are referred to the commanding officer of the post, camp, station, or other military establishment nearest which the loss or damage occurred. The commanding officer to whom a claim is referred convenes a board of one or more officers to investigate and report upon the circumstances under which the claim occurred.

SECTION III

UTILITIES

■ 90. DEFINITION.—The term "utilities", as used herein, includes repair and maintenance of all buildings, structures, and systems and the operation and maintenance of heating plants, refrigeration plants, water pumping and treatment plants, and all other similar plants, or systems existing at any post, camp, or station.

■ 91. RESPONSIBILITY.—*a.* The Quartermaster Corps is charged with the proper functioning of utilities at any post, camp, or station in the zone of the interior and the quartermaster assigned thereto is directly responsible for all activities pertaining to utilities. The quartermaster is under the direct control of the commanding officer and final responsibility for the efficient operation of utilities therefore rests upon the commanding officer who in turn is responsible to the War Department.

b. In the theater of operations, the Corps of Engineers is responsible for the construction, repair, and maintenance of roads, bridges, and structures and with the construction, repair, maintenance, and operation of railways, portable and fixed electric light plants, water supply systems, and all other utilities of general service not otherwise assigned. In the theater of operations, the Quartermaster Corps is responsible for the procurement, maintenance, and operation of utilities only at quartermaster establishments, such as storage, maintenance, and repair depots, refrigeration plants, and similar establishments operated by the Quartermaster Corps.

■ 92. ORGANIZATION.—All activities pertaining to utilities are organized in a utilities division of the quartermaster's office. The utilities division, when warranted by the volume of work, is headed by a commissioned officer designated as the utilities officer, who is an assistant to the quartermaster. When no commissioned assistant is available, the quartermaster acts as the utilities officer. It is the function of the utilities officer to supervise, control, coordinate, and administer all activities of the utilities division.

■ 93. OPERATIONS.—*a. General.*—This section in a general way describes—

(1) The functions of a utilities division.

(2) The organization required to enable the utilities officer to carry out his mission which is to supervise, coordinate, and control the operations of the utilities division with the object of—

(*a*) Securing adequate funds for utilities operations at a post, camp, or station.

(*b*) Expending those funds to the best advantage.

(c) Providing adequate records of the funds expended.

b. Administrative control.—The utilities officer exercises administrative control by—

(1) Requiring all work orders and requisitions for materials to be approved by him before work is started.

(2) Carefully inspecting all estimates and reports before they leave his division.

(3) Personally supervising the payment of civilian employees.

c. Technical control.—The utilities officer exercises technical control by—

(1) Inspecting work completed under work orders, both as to execution and amount of labor and materials expended.

(2) Making decisions from time to time upon questions submitted by personnel employed.

(3) Analyzing all operating reports with a view to making changes that will effect further economies.

■ 94. BRANCHES OF UTILITIES DIVISION.—The utilities division of a post quartermaster's office ordinarily will be divided into four branches as follows:

a. Administrative branch.—Processes mail, provides stenographic and typist service, issues work orders for work to be

done, maintains records of material and equipment on hand in the various shops, and replenishes materials and supplies by timely requisition on the supply division of the post quartermaster's office.

b. Control branch.—Prepares estimates of cost of work to be done, studies operation records of the various utilities plants and plans for such changes as will be conducive to more efficient operation, prepares all reports pertaining to utilities, inspects materials procured for maintenance and repair work, and inspects each job after completion.

c. Maintenance and repair branch.—Performs the actual work in connection with minor construction and also all maintenance and repair work upon buildings and other structures and systems.

d. Operations branch.—Operates the various utility plants and systems such as central heating plants, refrigeration plants, water purification, sewage disposal and fire protection systems, and similar installations.

■ 95. PERSONNEL.—*a.* The personnel required in the operation of utilities may consist of civilian and enlisted personnel.

(1) The enlisted men are detailed to the utilities division from the quartermaster detachment or from other military units. These men work under the supervision of the utilities officer while so detailed, but all administrative records, pay rolls and clothing records are maintained by the units from which the enlisted men are detailed.

(2) Civilian personnel is of two classes; permanent and temporary. Permanent personnel cannot be discharged or furloughed without prior approval of The Quartermaster General. Funds for payment of such personnel are authorized by The Quartermaster General. Temporary civilian personnel are those additional employees required for various miscellaneous jobs and are employed, as the necessity arises, when funds are available.

b. Both permanent and temporary civilian personnel must be selected from eligible lists furnished by the Civil Service Commission, but in case there are no individuals on the eligible lists, authority will be granted by the Civil Service Commission for temporary appointment pending the establishment of an eligibility register.

c. All details involving administration of civilian personnel

are handled by the administrative division of the post quartermaster's office, but any question involving the employment, promotion, dismissal, or disciplining of a civilian employee of the utilities division is submitted for the recommendation of the utilities officer before any action is taken.

d. The number of personnel, both civilian and enlisted, should in time of peace be kept as small as practicable for reason of economy, and in time of war for the conservation of manpower.

■ 96. PURCHASE, STORAGE, AND ISSUE OF SUPPLIES.—The purchase, storage, and issue of utilities supplies are a function of the supply division of the quartermaster's office. However, it is the duty of the utilities division to furnish definite specifications or other information as to the kind, quality, and amount of supplies required and the time when they are needed. Under the provisions of Army Regulations, it is provided that "except as otherwise provided in regulations, there will be but one stock record account maintained at each post, camp, or station for the supplies stored or issued by any particular arm or service." Therefore, all accountability for utilities materials and supplies is carried in the supply division. Nevertheless, the utilities officer and his administrative personnel must possess basic knowledge of property accountability in order that all operations and use of such materials will not be contrary to law and regulations.

■ 97. NEW CONSTRUCTION.—New construction work, except minor projects referred to in paragraph 98, is performed under the direct control of The Quartermaster General through the direct representative in the field, the constructing quartermaster.

■ 98. ALTERATIONS AND ADDITIONS.—*a.* Although the major portion of funds authorized to any station for the operation of utilities will be required for maintenance and repair of buildings and systems and for the operation of utilities, nevertheless it is often practicable to utilize a part of the utilities funds for alterations or additions to the buildings or systems.

b. Alterations and additions to buildings and systems may be accomplished by either of two methods:

(1) *By contract.*—This method may be used to advantage

whenever the project is sufficiently large to interest bidders in competing for the work or whenever the work to be done is of such special character that the required personnel is not available in the utilities division. If work is to be done by contract, plans and specifications outlining the scope of the work must be prepared and the work then placed under contract by observing the procedure outlined in section I.

(2) *By force account (purchase and hire).*—This method is the one most generally used for alterations and minor new construction work done by the utilities division. In this case, the required construction materials are purchased by the supply division of the quartermaster's office, turned over to the utilities division, and are then incorporated in the work by the personnel of the utilities division, supplemented by additional temporary civilian labor or by troop labor.

c. If work is done under contract, the utilities officer's particular duties consist in instituting a rigid inspection of the work, as it is installed, and in making provision for proper payment as the work progresses. He is not concerned with the purchasing of materials nor with supervision of the workmen. However, work done by contract is generally more expensive since the contract price includes the contractor's overhead expense and profit. Work done by the force account method involves no profit and the overhead expense is very largely carried by the War Department allotments for pay of permanent personnel.

■ 99. MATERIALS AND METHODS OF CONSTRUCTION.—*a. General.*—Whether the work (alterations, additions, or maintenance and repair) is performed by contract or by force account, it is essential that the utilities officer and his technical personnel have a basic knowledge of the requirements for the more commonly used construction materials and of the proper methods for their incorporation into the structure or system.

b. Plans and specifications.—Section I outlines the necessity for plans and specifications for any project to be accomplished. The utilities officer and his technical assistants should have a thorough knowledge of the material contained in that section.

■ 100. RECORDS AND REPORTS FOR NEW CONSTRUCTION, ALTERATIONS, AND ADDITIONS.—After the completion of any new construction work or of any major alterations and additions,

whether performed by contract or by force account, a record of the changes that have been made in the building, system, or any other post installation, as well as the report of the funds expended for the work performed, must be made. The essential record retained at the post, camp, or station is designated "The Historical Record."

a. Sources of information.—The original historical record forms are filled out from the data included in the completion report by the constructing quartermaster. Any modifications, alterations, additions, etc., to the existing buildings and systems will be covered in the records of the utilities division (work orders and contracts) and such information will be abstracted and incorporated into historical record forms.

b. Distribution.—Copies of the historical record will be prepared and distributed in accordance with Army Regulations.

■ 101. RECORDS, REPORTS, AND ESTIMATES FOR MAINTENANCE AND REPAIR WORK.—In addition to the records and reports required for all new construction and major alterations and additions, certain reports, records, and estimates in connection with maintenance and repair work must be made by the utilities officer upon prescribed forms furnished by the War Department.

a. W. D., Q. M. C. Form No. 95 (Annual Report—Defense of the Budget).—This is an annual report submitted in time to reach the office of The Quartermaster General on January 1 of each year and is a combination of a report of expenditure of funds for utilities for the complete fiscal year next preceding the date of the report and an estimate of such funds required for each of the three following fiscal years. Primarily, W. D., Q. M. C. Form No. 95 is a cost sheet showing how and where funds for utilities were expended as well as an estimate sheet showing the funds estimated as necessary for the three succeeding fiscal years. Since maintenance and repair work involves labor and materials, the preparation of this report requires consideration of the costs of all pay rolls (labor), contracts and purchase orders (materials, or materials and labor). In addition to these items, there must be included the prescribed per diem value of the enlisted men employed and also the value of materials used which were not procured from funds pertaining to the fiscal year being re-

ported upon. Detailed instructions for the preparation of W. D., Q. M. C. Form No. 95 are issued from time to time by the office of The Quartermaster General.

b. W. D., Q. M. C. Form No. 103 (Building Inspection Report).—This report is filled out whenever a building at a post, camp, or station is occupied and the report is rechecked when the building is vacated or a new responsible officer is placed in charge of the building. The form provides spaces for detailed notation as to the condition of the building itself and of the Government-owned furniture and equipment contained therein. Inasmuch as this inspection is made in the presence of the responsible occupying officer and the quartermaster (or his assistant), the report establishes any damage that may have been caused by the responsible occupant during his term of occupancy. Upon determination of the facts, it is then possible to determine whether the damage was due to fair wear and tear or whether it was due to the carelessness of the occupant and who should pay for the damage.

c. W. D., Q. M. C. Form No. 104 (Annual Report of Construction and Repair).—This report is prepared and submitted as soon as practicable after the end of each fiscal year. It shows how much money has been expended during the fiscal year upon each individual building, structure, and system for maintenance and repairs, including alterations and additions. This report also shows the total amount that has been spent since each building, etc., was constructed as well as the total estimated replacement value of each building, etc., at the time of making the report. The basic data for this report are secured from W. D., Q. M. C. Form No. 106 (Work Order).

d. W. D., Q. M. C. Form No. 105 (Estimate Sheet).—This form is used to present in standardized form estimates of cost of work in excess of $1,000.00 for approval of higher authority even though funds are available at the post, camp, or station to pay for the work. When no funds are available and emergency work is required, the estimates are also presented on this form, irrespective of the amount.

e. W. D., Q. M. C. Form No. 106 (Work Order).—In order to secure accurate data in the annual report of construction and repair (W. D., Q. M. C. Form No. 104) of the amount of money spent for maintenance and repair on each building, etc., it is necessary to make a detailed record at the time each repair job is completed. For this purpose, W. D.,

Q. M. C. Form No. 106 is used and a work order is issued for each repair job on each building, structure, or system. Detailed instructions on the preparation of W. D., Q. M. C. Form No. 106 are issued from time to time by the Office of The Quartermaster General. The work order is a very important record in utilities administration because—

(1) It furnishes basic data for W. D., Q. M. C. Forms No. 95 and 104.

(2) It provides a means for the utilities officer to check the employees regarding their labor efficiency and economy in the use of materials.

(3) The retained copy in the office of the utilities officer serves as the "follow-up", enabling him to expedite the jobs that are making poor progress. It also enables him to anticipate the need for employment of additional temporary civilian labor.

■ 102. OPERATION OF PLANTS.—*a. General character of work.*—(1) In addition to the funds expended for maintenance and repair of buildings, other structures, systems, and utilities plant, expenses are incurred in the operation of the various utilities plants at the post. These plants may include electric generating plants, water treatment plants, refrigeration plants, central heating plants, etc. The operating costs for such plants include the overhead and operating personnel, fuel, operating supplies, etc. Where advisable from an economic standpoint, contracts are made with commercial concerns for services such as furnishing of water, electricity, and gas.

(2) The expenditure of funds for the operation of these utilities or for the purchase of such services is classed as operating costs and certain forms for records, reports, and estimates for this class of expenditure are submitted to The Quartermaster General in order that it may be determined whether or not these costs are reasonable.

b. Estimates, records, and reports.—The operation of any utility plant, such as an electric generating plant, water pumping and treatment plant, etc., is not justified whenever the cost of production is higher than the purchase of the same service (if available) from a private or municipal plant. Hence, it is necessary to keep a record of all operating costs and the plant output in order to determine the most eco-

nomical means to provide for the service in question. When there is no private corporation that can furnish the desired service, it is still necessary to keep a record of production costs in order to determine whether the utility plant is being operated upon an economical basis. Therefore, these records are reported on the forms listed below and emphasis is placed upon the purpose served by the various reports rather than upon detailed instructions for their preparation.

(1) *W. D., Q. M. C. Form No. 95 (Annual Report—Defense of the Budget).*—This report is described in paragraph 101*a* and the same form is used to report all operating costs for utilities plants and systems.

(2) *W. D., Q. M. C. Form No. 118 (Operation of Utility Plants).*—This report is a consolidated cost data sheet on operations of the following utilities plants and systems: steam boiler plants, electric generating plants, refrigerating and ice plants, water pumping and treating plants, sewage pumping and waste disposal plants, and fire protection system.

(3) *W. D., Q. M. C. Forms Nos. 108 and 108a (Fuel, Light and Power Report).*—At the end of each fiscal year, W. D., Q. M. C. Form No. 108 is submitted showing for each building, plant, and system the actual consumption of fuel, light, and power, as shown by the fuel issue slips and by reading of the meters. Form No. 108a is an extract of the amount of fuel, light, and power consumed during the period July 1 to December 31 of each fiscal year and an estimate of the needs for the remainder of the fiscal year.

(4) *W. D., Q. M. C. Form No. 17 (Boiler Inspection Report).*—Army Regulations require that all steam boilers be inspected at least once a year, except boilers carrying less than 20 pounds steam pressure and boilers not in service. The actual inspection is made by a "Board of Local Inspectors, Steam Vessels" under the Department of Commerce and the findings are reported on W. D., Q. M. C. Form No. 17. Any defects discovered are corrected by personnel working under the supervision of the utilities officer.

■ 103. FUEL AND LIGHT ALLOWANCES.—Although the reports, records, and estimates described will enable The Quartermaster General to estimate whether or not the utilities plants at a post, camp, or station are being operated econom-

ically, such reports provide no data as to the operation of individual heating plants and interior lighting systems in barracks, quarters, and other buildings. It is not practical to control the operations of these heating and lighting operations in individual buildings by means of reports similar to those required for post utility plants because of the endless amount of paper work involved. However, control of such small installations is obtained by the method of establishing fair allowances of fuel and electric current and by making the occupant of the building pecuniarily liable for all consumption in excess of these allowances unless he can show that such excess consumption was not due to neglect or carelessness on his part.

■ 104. SPECIAL REPORTS AND ESTIMATES.—*a.* Report of buildings destroyed is made in accordance with Army Regulations.

b. A report on funds pertaining to construction, maintenance, repair, and operation of buildings and utilities is made each quarter or oftener to The Quartermaster General.

c. Other special reports in connection with utilities operations are made as called for by higher authority.

CHAPTER 5

ORGANIZATION AND TRAINING

	Paragraphs
SECTION I. Organization	105–106
II. Training	107–110

SECTION I

ORGANIZATION

■ 105. GENERAL.—The functions of the Quartermaster Corps dictate a logical organization along functional lines into four main divisions; administration, supply, transportation, and construction. These main divisions are broken down into operating branches. As every function of any activity of the Corps is administered in the office of The Quartermaster General, the organization of his office is shown on the chart below. The organization of field offices will conform in general to the organization of this office. In war, the organization in general contemplates the expansion of the existing peacetime organization to meet the requirements of the situation with certain changes as outlined in The Quartermaster General Mobilization Plan.

■ 106. QUARTERMASTER UNITS.—*a.* Quartermaster troops and personnel are classified according to the function for which primarily designed. According to assignment or attachment, quartermaster units are either divisional or nondivisional. The organic divisional quartermaster units are the quartermaster battalions of infantry divisions and quartermaster squadrons of cavalry divisions. All other quartermaster troops are nondivisional and may be classified in the following groups:

(1) *General service.*—These include companies and battalions designed to furnish the unskilled labor required for all quartermaster service operations and to provide a general labor pool.

(2) *Supply.*—These include railhead companies, depot companies, sales commissary companies, bakery companies, re-

WAR DEPARTMENT
Office of the Quartermaster General
The Quartermaster General
Executive officer
C. C. C. affairs
Executive office
Executive divisions
General service division
Fiscal division
Civilian personnel division
Military personnel and training division
Planning and control division
Operating divisions
Supply division
Construction division
Motor transport division
Transportation division
Remount division

frigeration companies, and GHQ Air Force air base companies.

(3) *Motor transport.*—The units in this group may be further classified as follows:

(*a*) *Administration.*—This includes headquarters company motor transport service.

(*b*) *Operating.*—These include companies, battalions, and regiments, truck and car companies.

(c) *Maintenance.*—These include companies and battalions, light maintenance; and companies, battalions, and regiments, heavy maintenance.

(*d*) *Supply.*—These include gasoline supply companies and battalions and depot companies, motor transport.

(4) *Animal transport.*—These include wagon companies, pack troops, remount troops, and squadrons.

(5) *Miscellaneous.*—In this group are placed the so-called utility units such as sterilization and bath companies, salvage collecting companies, headquarters quartermaster salvage depot, laundry companies, graves registration companies, and mobile shoe repair companies.

(6) *Detachments.*—In addition to the above units, there are quartermaster detachments of varied composition at posts, camps, and stations throughout the Army which carry on the routine duties of supply, transportation and utilities, and other activities assigned to the Quartermaster Corps. These detachments utilize a large portion of the personnel of the Corps.

b. Although the work of most of the quartermaster units is of a technical nature, they are nevertheless military units subject to similar field conditions as other units of the military force and are organized along military lines for discipline, military administration, and for their own defense.

c. The technical organization is along functional lines, the units being divided into appropriate subdivisions, each subdivision being charged with the supervision and operation of some technical activity.

SECTION II

TRAINING

■ 107. MISSION.—The training mission of the Quartermaster Corps is to train its personnel and units to carry out their

assigned duties in such a manner as to increase the combat efficiency of the Army as a whole.

■ 108. BASIC, TECHNICAL, TACTICAL, AND ADMINISTRATIVE TRAINING.—*a.* Troops of the Quartermaster Corps must be proficient in the following:

(1) The basic training of a soldier as outlined in mobilization training programs.

(2) Administration.

(3) Protective measures against chemical agents, aircraft, and mechanized attack.

(4) Care and use of applicable weapons, equipment, and transportation.

(5) Technical service of quartermaster technical units.

(6) Tactics and technique of the Quartermaster Corps.

(7) Cooperative duties as part of the tactical team.

b. The basic group includes the general military qualifications required of all troops plus some specialties particularly applicable to the Quartermaster Corps. Each unit must have sufficient military training for its own military administration, protection, subsistence, clothing, transportation, and discipline.

c. The technical group includes technical qualifications necessary for the operation of quartermaster specialties. These are special subjects in the following categories: military; administrative; supply; transportation (rail, water, and motor); transportation (animal and remount); construction; and utilities. To carry on the technical operations, various specialists must be trained in the units to which assigned in schools or in training and replacement centers. However, personnel with experience in related civilian occupations are more readily trained and should be obtained when possible.

d. The tactical and administrative group includes qualifications in road discipline and field exercises embracing loading and distribution of supplies; troop movements and convoy operations; communications; concealment; protection; and encampments and general field duties as part of a tactical organization. All quartermaster commanders of units in a tactical organization must be familiar with tactics, and their tactical judgment should be developed by applying fundamental tactical consideration in the solution of field exercises, beginning with simple situations that might confront platoon

and company commanders. Such situations can be incidents in the problems of battalion or higher commanders, thus enabling each commander to become better acquainted with the part he is to play in tactical operations.

e. The fact that quartermaster organizations have routine duties to perform in connection with the supply and transportation of the Army must not be permitted to interfere with the carrying out of a definite training program. A certain part of every working day must be set aside for training.

■ 109. PROGRESSIVE TRAINING.—*a.* All training should progress from the elementary to the more advanced. It is initiated by training individuals and small units. Subsequent training will be devoted to the training of each subdivision from the smallest to the largest until the training of the unit as a whole is accomplished. A progressive procedure gives opportunity for the training of subordinate leaders in the responsible exercise of command. Concurrent training of higher and lower units gives to all an appreciation of the part each subdivision must play in the unit team. Refresher training must be carried out to the extent necessary to maintain standards once they are attained.

b. During mobilization, it is necessary to change the emphasis from progressive training to balanced training to insure the ability to break off training before the mobilization training period is completed and move to the theater of operations and operate as a unit or part of a larger force.

■ 110. APPLICATORY SYSTEM.—The applicatory system of training should be employed wherever possible. It requires the individual or unit under instruction to apply methods being taught to an assumed or outlined situation simulating war conditions. It involves the following steps which should be understood and applied to all training: preparation on the part of the instructor; explanation; demonstration, or illustration; application, or practice, to acquire skill in execution; examination, or test, to determine progress or proficiency; and discussion, to point out correct and incorrect methods of execution.

CHAPTER 6

QUARTERMASTER SERVICE IN DIVISIONS AND HIGHER UNITS

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SECTION I

GENERAL

■ 111. GENERAL.—*a.* In the theater of operations, the function of the Quartermaster Corps is to supply the services essential to the well-being of the unit concerned. These services closely parallel those enumerated in chapter 1.

b. The strength and composition of the quartermaster service of a theater of operations and within each subordinate command depend on the organization of the theater of operations and the functions and missions of each subordinate command. Deficiencies in any subordinate unit are met by the assignment of quartermaster personnel and units from higher headquarters.

■ 112. DEFINITIONS.—*a. Credit.*—A credit is an allocation of a definite quantity of supplies placed at the disposal of the commander of an organization for a prescribed period of time.

b. Call or draft.—A call or draft is a demand for the delivery of supplies under the terms of a credit.

c. Reserve supplies.—Reserve supplies are those supplies accumulated in excess of immediate needs for the purpose of insuring continuity of an adequate supply under any condition of campaign.

d. Battle reserves.—Battle reserves are supplies accumulated in the vicinity of the battlefield in excess of unit and individual reserves. The accumulations and maintenance of

battle reserves are the responsibilities of the command concerned.

e. Unit reserves.—Unit reserves are the prescribed quantities of supplies carried as a reserve by a unit.

f. Individual reserves.—Individual reserves are those supplies carried on the soldier, animal, or vehicle for his or its individual use in an emergency.

g. Balanced stocks.—Balanced stocks are an accumulation of supplies of the class and quantity determined as necessary to meet requirements for a fixed period of time.

h. Day of supply.—The day of supply is a term used to express collectively the estimated average expenditure of various items of supply per day in campaign expressed in quantities of specific items or in pounds per man per day.

i. Daily telegram.—A daily telegram is a daily request made by a division or higher unit for the unit's daily requirements of supplies.

j. Automatic supply.—The term "automatic supply" signifies a process of supply under which deliveries of specific kinds and quantities of supplies are moved in accordance with a predetermined schedule.

k. Daily automatic supply.—This means that certain supplies are dispatched daily to organizations.

l. Grain ration.—Grain ration is the amount of grain authorized per animal per day. It varies from 9 to 14 pounds depending upon the weight of the animal.

m. Rations.—The various types of rations are covered in section IV, chapter 2, and in FM 100–10.

n. Depot.—An organized locality for the reception, classification, storage, issue, or salvage of supplies or for the reception, classification, and forwarding of replacements. The designation of the depot is that of the unit establishing it followed by the kind of supplies stocked; for example, "First Army Ammunition Depot No. 1," "Communications Zone General Depot No. 3," or "First Army Replacement Depot."

o. Railhead (truck head, navigation head).—A supply point where loads are transferred from the particular type of transportation. When unqualified, the term has no connection with a particular class of supplies.

p. Distributing point.—A place other than depots and railheads where supplies are issued to regiments and smaller units. Distributing points are designated by the class of sup-

plies therein and by the identity of the unit establishing them; for example, "Class I Distributing Point, 1st Division," or "Ammunition Distributing Point, 1st Infantry."

q. Dump.—Temporary stocks of supplies within the area of corps, divisions, or smaller units. When supplies are ordered issued from dumps, the latter become distributing points. Dumps are designated by the identity of the unit establishing them and by the class of supplies therein; such as, "1st Infantry Ammunition Dump," or "1st Division Class I Supply Dump."

r. Supply point.—A generic term used to include depots, railheads, distributing points, and air bases.

s. Control point.—An agency established by a unit at a convenient point on the route of its trains where information and instructions are given and received in order to facilitate and regulate supply; for example, "1st Division Ordnance Control Point," or "Class I Supply Control Point."

t. Train.—The train of a unit is that portion of the unit's transportation with its accompanying personnel which operates under the immediate orders of the unit commander in supply, evacuation, and maintenance. The designation of a train is the same as that of the unit, for example, "1st Infantry Train"; "Ammunition Train, 1st Infantry"; "Kitchen Train, 1st Field Artillery"; or "Medical Train, 1st Battalion, 3d Field Artillery."

■ 113. CLASSIFICATION OF QUARTERMASTER UNITS.—*a.* Quartermaster units comprise companies, troops, battalions, squadrons, and regiments. The composition, strength, and missison of the command to be served determines the number of each type of units that should be assigned.

b. Units required to perform the quartermaster mission in the theater of operations are classed as supply, transportation, maintenance, and service.

(1) The supply group consists of the following units:

(*a*) Headquarters companies of quartermaster battalions and quartermaster regiments infantry divisions (T/O 10–16 and T/O 10–272).

(*b*) Headquarters troops of quartermaster squadrons of cavalry divisions (T/O 10–116).

(*c*) Depot companies (supply) (T/O 10–227).

(*d*) Bakery battalions and companies (T/O 10–145 and T/O 10–147).

(*e*) Gasoline supply battalions and companies (T/O 10–75 and T/O 10–77).

(*f*) Railhead companies (T/O 10–197).

(*g*) Refrigeration companies (T/O 10–217).

(*h*) Remount squadrons and troops (T/O 10–95 and T/O 10–97).

(*i*) Sales commissary companies (T/O 10–157).

(2) The transportation group comprises—

(*a*) Truck regiments, battalions, and companies or troops (T/O 10–51, T/O 10–55, and T/O 10–57).

(*b*) Car companies (T/O 10–87).

(*c*) Pack troops (T/O 10–118).

(*d*) Wagon battalions and companies (T/O 10–125 and T/O 10–127).

(3) The maintenance group comprises—

(*a*) Light maintenance battalions and companies or troops (T/O 10–25 and T/O 10–27).

(*b*) Heavy maintenance regiments, battalions and companies, and motor transport depot companies (T/O 10–41, T/O 10–45, T/O 10–47, and T/O 10–48).

(*c*) Salvage depots (T/O 10–250).

(*d*) Mobile shoe repair companies (T/O 10–237).

(4) The service group comprises—

(*a*) Graves registration companies (T/O 10–297).

(*b*) Laundry battalions and companies (T/O 10–165 and T/O 10–167).

(c) Port battalions and companies (T/O 10–265).

(*d*) Salvage collecting companies (T/O 10–187).

(*e*) Service battalions and companies (T/O 10–65 and T/O 10–67).

(*f*) Sterilization and bath battalions and companies (T/O 10–175 and T/O 10–177).

c. The details as to assignments of personnel, major items of transportation, weapons and animals of quartermaster units are indicated in Tables of Organization for the various units in FM 10–10.

SECTION II

INFANTRY DIVISION

■ 114. GENERAL.—Certain services have been assigned to the Infantry division to relieve the fighting troops of the responsibility of administrative details. The quartermaster regi-

ment is one of the units of these services and is designed to accomplish the quartermaster services necessary to the infantry division (square). In the infantry division (triangular) and the armored division, the quartermaster battalion performs these services. The quartermaster regiment (square division) and the quartermaster battalion (triangular division and armored division) furnish for this purpose the necessary personnel and units trained in the technique of quartermaster administration, supply, transportation, and other assigned activities.

■ 115. QUARTERMASTER REGIMENT, INFANTRY DIVISION (SQUARE).—*a. Regimental headquarters.*—This consists of the commander and his staff. The commander of the regiment acts in the dual capacity of commander of the regiment and a member of the special staff of the division commander. As a commander, he performs the normal duties of a commanding officer and is responsible for the efficient operation of the quartermaster service of the division in accordance with policies, plans, and decisions of the division commander. As a division special staff officer, he performs those duties enumerated in chapter 1. The regimental staff assisted by the enlisted personnel from headquarters company, operating under the regimental commander, perform the normal duties of a regimental headquarters.

b. Headquarters company.—This company consists of a headquarters, division quartermaster platoon, a regimental headquarters platoon, and a gasoline supply platoon.

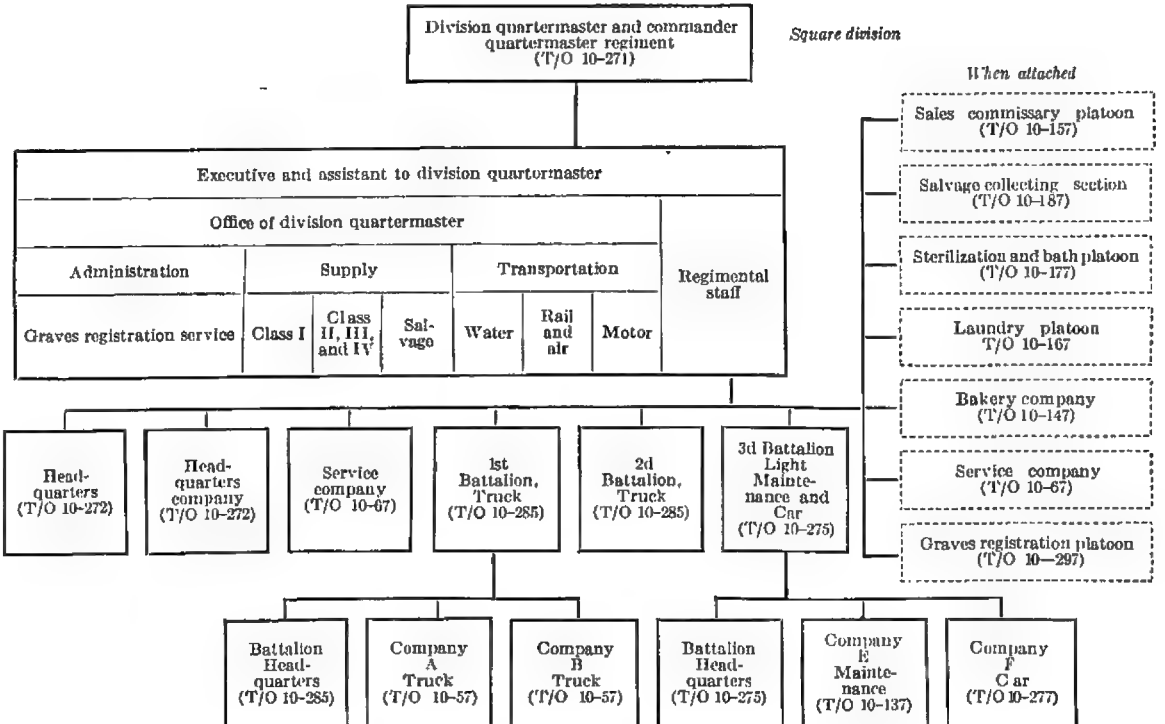
(1) The company headquarters provides for the normal administration and supply of the company.

(2) The division quartermaster platoon provides the nucleus of enlisted personnel for operation of the office of the division quartermaster.

(3) The regimental headquarters platoon provides the enlisted personnel for operation of the regimental headquarters.

(4) The gasoline supply platoon carries the division reserve of gasoline and distributes gasoline and oil to units of the division.

c. Service company (Company S).—The principal functions of the service company are to handle and care for the loads of the trucks and trains and to furnish personnel for handling quartermaster supplies and ammunition at division sup-


Division quartermaster and commander quartermaster regiment (T/O 10-271)
Square division
When attached
Executive and assistant to division quartermaster
Office of division quartermaster
Administration
Supply
Transportation
Regimental staff
Graves registration service
Class I
Class II, III, and IV
Salvage
Water
Rail and air
Motor
Sales commissary platoon (T/O 10-157)
Salvage collecting section (T/O 10-187)
Sterilization and bath platoon (T/O 10-177)
Laundry platoon T/O 10-167
Bakery company (T/O 10-147)
Service company (T/O 10-67)
Graves registration platoon (T/O 10—297)
Head-quarters (T/O 10-272)
Head-quarters company (T/O 10-272)
Service company (T/O 10-67)
1st Battalion, Truck (T/O 10-285)
2d Battalion, Truck (T/O 10-285)
3d Battalion Light Maintenance and Car (T/O 10-275)
Battalion Head-quarters (T/O 10-285)
Company A Truck (T/O 10-57)
Company B Truck (T/O 10-57)
Battalion Head-quarters (T/O 10-275)
Company E Maintenance (T/O 10-137)
Company F Car (T/O 10-277)

ply points. It also forms the nucleus of the division labor pool. This company usually moves with the truck battalions and bivouacs in the vicinity of the railhead.

d. Truck battalions.—There are two truck battalions in a quartermaster regiment designated first and second battalions. Their principal functions are to transport any division reserve of class I supplies and small arms and field artillery ammunition prescribed by proper authority; transport supplies from supply points to the trains of the units of the division, distributing points, and front line units of the division; and to furnish troop transportation for the division. They also constitute a division reserve of vehicles and nucleus of the division motor pool when one is established.

e. Light maintenance and car battalion.—The third battalion of the quartermaster regiment is the light maintenance and car battalion which consists of a battalion headquarters, one light maintenance company (Company E), and one car company (Company F).

(1) The light maintenance company provides third echelon maintenance for divisional motor transport, operates unit replacement shops, and provides personnel trained in making replacement of unserviceable unit assemblies, minor repairs to automotive equipment, and in the technique of motor transport supply. This company can operate two separate mobile repair shops.

(2) The car company is divided into a car platoon and a motorcycle platoon. The former furnishes passenger car service for the division headquarters. The motorcycle platoon furnishes motorcycle messenger service for the division message center.

■ 116. DIVISION QUARTERMASTER'S OFFICE.—The office of the division quartermaster is organized to facilitate the direction, administration, and operation of quartermaster activities for the division as a whole. A workable organization of this office is to group all duties under three divisions: administrative, supply, and transportation.

a. Administrative division.—This division operates directly under the regimental intelligence plans and training officer who combines this administrative duty with his responsibilities as a regimental staff officer. The principal functions of the administrative division are:

(1) Preparation of plans and orders for the quartermaster service of the division.

(2) Coordination of the execution of such plans and orders.

(3) Maintenance of the office of record for the division quartermaster as a special staff office.

(4) Quartermaster journal.

(5) Collection of historical data and the preparation of operation reports.

(6) Preparation of estimates for funds when required.

(7) Control of the allotment of funds.

(8) Quartermaster accounting for funds.

(9) Administration of quartermaster regimental service of the division.

(10) Control of the labor pool (employment of service company and any attached service troops).

(11) Quartering.

b. Supply division.—This division operates under an assistant to the division quartermaster who is designated as the quartermaster supply officer. The supply division—

(1) Provides and plans for the distribution of all quartermaster supplies and remounts within the division, except motor transport supplies and equipment.

(2) Directs the operation of attached supply units, such as salvage, sterilization and bath, sales commissary, bakery, etc.

(3) Reconnoiters and recommends to the division quartermaster regarding location of class I supply railheads and the scheme of distribution of class I supplies.

(4) After consultation with the unit supply officers, recommends the location of bivouacs of kitchens within the general limits prescribed by the division commander.

(5) Maintains essential statistics of quartermaster supply operations.

(6) Supervises the collection and disposition of salvage materials.

c. Transportation division.—This division operates under the division transportation officer. The principal functions of this division are—

(1) To provide for the transportation of troops and supplies by land and water, including the necessary arrangements therefor with the designated carriers.

(2) To direct and supervise the employment of the trans-

portation of the quartermaster regiment.

(3) To provide and plan for the distribution of all kinds of motor transport supplies and equipment.

(4) Inspection and maintenance of all motor vehicles in the division except those charged to the Ordnance Department.

(5) Technical advice and assistance to the division quartermaster on all matters relating to the operation and maintenance of motor and animal transportation within the division, including training of personnel in such matters.

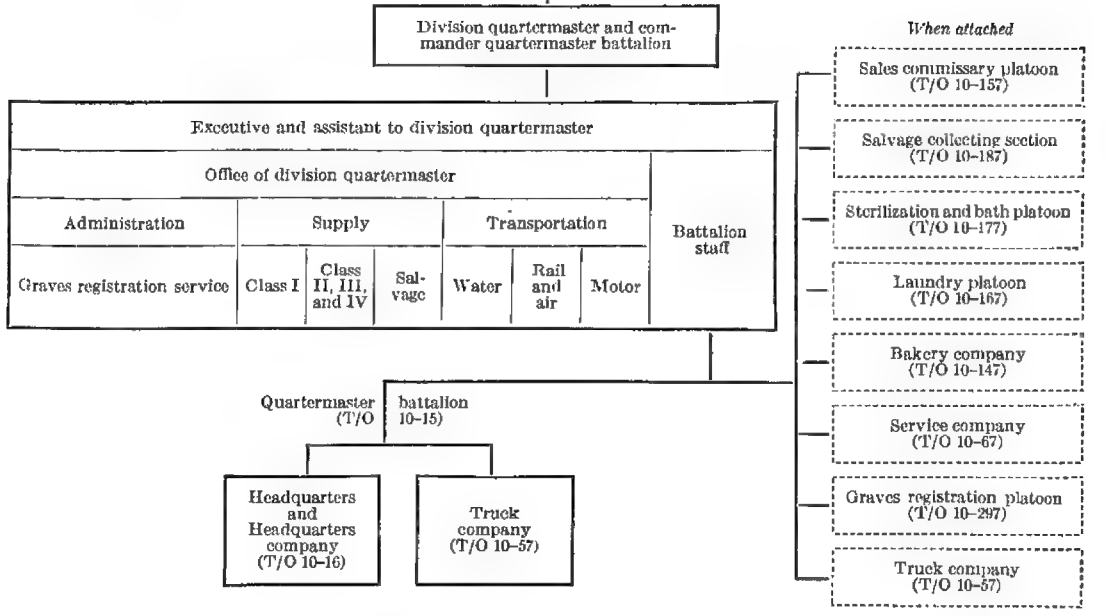
(6) To provide dispatching service for the division transportation pool when such pool is established.

■ 117. QUARTERMASTER BATTALION, INFANTRY DIVISION (TRIANGULAR).—This battalion consists of a headquarters, a headquarters company, and truck company. The battalion headquarters furnishes both the officers and enlisted personnel for operation of the division quartermaster office and the battalion headquarters. The headquarters company is subdivided into a company headquarters, a car platoon, a service platoon, and a maintenance platoon. The company headquarters performs the normal duties of a company headquarters. The car platoon furnishes the passenger car transportation for the division commander and the division headquarters staff. The service platoon furnishes the labor for handling supplies and ammunition and is the nucleus for the division labor pool. The maintenance platoon furnishes repair and wrecker service to the division motor transport. This platoon is divided into a platoon headquarters performing the normal duties of a platoon headquarters, a wrecker section for performing wrecker service, two repair sections operating mobile repair shops, and a supply section which issues motor transport supplies. The truck company furnishes the transportation necessary to transport any authorized division reserve of supplies, furnishes transportation for movement of supplies and troops, and forms the nucleus of the division motor pool.

a. Battalion commander.—The battalion commander performs the normal duties of the commander of his organization and is also a staff officer on the special staff of the division commander. His duties are similar to those enumerated above for the regimental commander, quartermaster regiment, infantry division (square).

b. Office of the division quartermaster.—The organization

QUARTERMASTER SERVICE INFANTRY DIVISION (Triangular)



of the office of the division quartermaster (triangular division) is similar to that described above for the quartermaster regiment, infantry division (square). This battalion furnishes, in general, the same service that the quartermaster regiment of an infantry division does, except that due to reduced personnel and trucks, it may not be able to perform these duties in as great detail.

■ 118. QUARTERMASTER OPERATIONS, INFANTRY DIVISION (SQUARE).—*a. Basis of supply.*—In a division whose trains are motorized, supply operations for all classes are based on these supplies being hauled either in regimental or in divisional transportation from army supply points to the using troops. Normally, in the delivery of supplies, they are not transferred to other trucks or placed in dumps from the time they are received from the army supply points until they are delivered to the using troops. Based on consideration of the tactical situation, reserves carried, probable expenditure rate, distances involved, routes available, and restrictions imposed by higher authority, the division commander determines the degree of responsibility that will be placed on subordinate commanders for effecting resupply with their own transportation. The division commander must insure that the requirements placed on subordinate units for the utilization of their transportation in effecting resupply are not excessive. On the other hand, the transportation of the division quartermaster unit constitutes the division reserve of vehicles, which is inadequate to meet in full the requirements for resupply of the division during a protracted period.

b. Class I supply.—An important duty of the quartermaster regiment is the distribution of class I supplies. These supplies consist of rations for men and animals and other supplies consumed at a uniform daily rate. In order to relieve the combat troops of anxiety and insure an uninterrupted flow of class I supplies, the delivery of these items is usually on an automatic basis. It should never be suspended unless the situation clearly demands it and then only upon the order of the division commander.

c. Daily telegram.—Ration requirements are based upon the strength of the division in men and animals; gasoline and oil, upon consumption. The strength reports of regiments and similar units are consolidated by the division

adjutant who forwards the information to the division quartermaster. In the meantime, the unit supply officers report to the quartermaster the consumption of gasoline and oil for the preceding 24 hours. Based upon these figures, the quartermaster supply officer prepares the daily telegram, which is dispatched by the division quartermaster to the army quartermaster, a copy being furnished to the division G-4; for example, "Strength 12,960; animals 450; gasoline 26,300; oil 700. Div. QM 3d Division." It is preferable to send the daily telegram by telegraph, but it may be a telephone message or report delivered by messenger. The army quartermaster consolidates the telegrams from all units of the army and transmits the consolidated requirements to the regulating officer, who calls upon the communications zone depots for the supplies. These supplies are then dispatched on the daily train to the division area.

d. Daily train.—One unit section of the daily train carries the supplies for one division or similar unit. Each daily train consists of one to three unit sections, each unit section being left for unloading at its respective railhead. When the division is acting independently, gasoline and oil cars may be attached to the unit section of the daily train.

e. Class I supply railhead.—(1) The class I supply railhead is the point on a railroad, designated as such, which provides rail accommodations for the supply of troops it is designated to serve. Class I railheads or truckheads will be established in practically every situation. Generally not more than two divisions, or one division and corps troops, should be served from any one railhead. The railhead should be located convenient to the troops it serves, beyond the maximum effective range of hostile artillery and in an area protected from mechanized attack. It should have sufficient siding capacity to take care of the cars arriving at that railhead together with adequate switching facilities, closed and open storage for supplies received, and sufficient space for sorting. A good road net, providing adequate turn-around facilities is a prime requisite. Adequate office space together with shelter for the men should be provided and, if a reserve is to be kept at the railhead, sufficient storage facilities must also be provided.

(2) The railhead is an agency of the regulating officer and is operated by a railhead platoon or company. The platoon

or company commander is the railhead officer. As soon as he arrives at the railhead, he formulates his plan of operation and completes the necessary preliminary arrangements and then opens the railhead for operations. The time of opening is usually in advance of the arrival of the daily train, and during this time the railhead is ready to make issues from the railhead reserve, if available, to receive prisoners of war, soldiers on furlough, and salvage.

(3) In the combat zone, the daily train should arrive at the railhead during the hours of darkness, preferably before midnight in order to permit distribution before daylight. However, if the situation warrants, it may arrive during daylight. In other zones, it may arrive at any time the situation permits.

f. Class I railhead reserves.—A class I railhead reserve consists of items of class I supplies held in reserve at the railhead. In stabilized situations, a railhead reserve will usually be maintained. In a mobile situation, when the division is operating independently, a railhead reserve may be maintained, depending on the tactical situation, facilities available, and the danger of interruption of the lines of communication. Whether a railhead reserve is to be maintained and the amount of the reserve is determined by the division or higher commander. In some situations, this reserve may be kept mobile on railroad cars. Overages due to time lag between sending of daily telegram and arrival of daily train are placed in the railhead reserve, while shortages may be made up from this source.

g. Issue by railhead officer.—Prior to the arrival of the daily train, the quartermaster supply officer secures the strength report for that day from the unit supply officers. The method of distribution to the troops having been determined, the quartermaster notifies the railhead officer as to the number of rations required by each unit for that day and the method of distribution. The railhead officer assisted by labor from the service unit of the quartermaster regiment or battalion, sorts into appropriate unit lots and loads the supplies arriving on the daily train onto the vehicles of the division. The time required for sorting and loading is dependent on the method of distribution to be employed by the division and the facilities available, but every effort should be made to complete the task so that the vehicles can

complete the distribution under cover of darkness. Paulins should be spread to receive the ice and fresh meat, if the "A" ration is delivered, and other paulins should be used to cover these articles. Fresh bread should be handled separately to avoid breaking and, if not received in cloth sacks, should be delivered, if possible, in sacks furnished by the division. In distributing supplies, cartons and boxes should not be broken at the railhead, but organizations should receive and be charged with whole packages whenever practicable. Small components of the ration may be issued for 1 week or may be issued as needed from day to day. In some situations, hay and wood if required may be shipped in on the daily train. In other situations, it may be procured locally in which case the division quartermaster or his representative actually procures it. Wood may be purchased locally or procured by units from available local sources. Based on the strength of the units for that day, the division quartermaster or his representative delivers to the unit supply officer, either at the railhead, unit distributing point, or division distributing point, the necessary class I supplies. The unit supply officer signs for the supplies received whereupon the responsibility of the division quartermaster ceases.

h. Distribution by the quartermaster.—(1) The method of distribution of class I supplies will be prescribed by the division commander. There are three methods of distribution by the quartermaster to the troops; unit, railhead, and distribution to division distributing points or dumps.

(*a*) *Unit distribution.*—Unit distribution is that method where the quartermaster distributes supplies to various elements of the division at the unit distributing point or kitchen area of each regiment or separate unit. The unit supply officer concerned furnishes labor required for unloading trucks. The groups of quartermaster trucks necessary to transport the supplies for each unit are loaded at the railhead by labor furnished by the division quartermaster. Each group proceeds independently of other truck groups to the proper unit area. When there is danger of attack, the groups may be combined into a convoy. A detailed schedule for the operation of the quartermaster trucks should be incorporated in the quartermaster field order. Whenever unit distribution is contemplated, class I control points should be established where unit guides meet the quartermaster trucks, or regiments

should send guides to the railhead. A class I control point is located at or near a well-defined terrain feature on the route between the railhead and the unit distributing point where guides from the unit being served meet the quartermaster trucks and guide them to the unit area of distribution. These class I control points should be designated in the administrative order of the division. Unit distribution is used when ample quartermaster transport is available and time and space will permit, or when regimental transportation is not available.

(*b*) *Railhead distribution.*—In railhead distribution, regimental trucks of the various units draw their supplies at the railhead operating under quartermaster control while at the railhead. This method of distribution is used when the quartermaster transport is required elsewhere or when time is not a major consideration, or when unit trains are within convenient operating distance of the railhead and when only one division is served at a railhead. Railhead distribution requires coordination between the quartermaster and the units being served. It is, therefore, vital that a time schedule should appear in the division administrative order.

(*c*) *Division distributing points.*—The division quartermaster may deliver class I supplies to division distributing points for the division, supplying units of approximately the size of a brigade. This method may be used in certain retrograde movements where it is desirable to dump class I supplies at distributing points so that the unit kitchens may pick them up while moving toward the rear. It may also be used when the distance or time involved is too great for either the quartermaster trains or unit trucks to make the return trip during the specified time. It may also be used where there is danger of an air attack and rapid dispersion of supplies becomes imperative. This method of distribution may be partial, some units having railhead or unit distribution while others are receiving their supplies at division distributing points. In either case, location of distributing points and time schedules for arrival of units thereat should be announced.

(2) In all methods of distribution, the vehicles traveling the greatest distance should be loaded first except that in railhead distribution those vehicles bivouacked close to the railhead may be loaded first pending the arrival of the vehicles having a greater distance to travel.

(3) Due to circumstances beyond the control of the division quartermaster, it may be necessary to devise special methods of distribution or combinations of the methods described. These, however, should be held to a minimum. (See FM 100–10.)

i. Division reserve.—The quantity and type of rations to be carried in the quartermaster and kitchen trains will be announced from time to time by the division or higher commander. Probability and type of combat, distance to army supply points, amount and type of transportation available, character and condition of road net, danger of interruption of lines of communication by hostile air and mechanized attack, terrain (defiles, etc.) and the probable relative urgency of class I supplies versus other supplies will all influence the commander in making his decision as to quantity and types to be carried.

(1) Each kitchen can usually carry one "A," "B," or "C" ration and the unconsumed portion of another. As a general rule, the ration cycle will begin at supper. Rations delivered to the kitchens one night are for consumption beginning with supper the next day. In special circumstances, however, the cycle may begin with breakfast and the ration delivered one day will be for consumption beginning with breakfast the next day.

(2) Any ration prescribed by proper authority to be carried in the prescribed load of the quartermaster regiment will remain intact until such time as it is necessary to issue it, authority for its use being secured from the division commander. The supplies carried in the quartermaster regiment may be issued prior to the arrival of the daily train, provided the supplies arriving on the daily train are of the same type as those carried in the quartermaster train and the division commander has approved the issue. If this is done, the ration must be replaced in the quartermaster regiment as soon as practicable.

(3) The "A" ration may be issued daily from army class I railheads to all divisions and other units not actively engaged with the enemy. When the "A" ration arrives on the daily train, every effort should be made to issue it directly to the troops immediately upon receipt at the railhead. For this reason, whenever the "A" ration is received by the division, distribution of the ration carried in the quartermaster regi-

ment or in the railhead reserve should be avoided.

j. Truck head or navigation head.—Supplies arriving at a truck head or navigation head will be distributed in a manner similar to that employed by the railhead.

k. Kitchens.—In combat, the division quartermaster, after conferring with the regimental S–4's, recommends the location of the bivouacs of the kitchens grouped by regiments (or battalions). The meals are prepared at this bivouac and immediately after dark, trucks are dispatched to locations from which the food can be carried to the front lines.

l. Class I supply in varying situations.—(1) *On the march.*—When troops are on the march, distribution may be made to the new kitchen bivouacs after arrival thereat, or to the old kitchen bivouacs prior to the departure of the trucks.

(2) *Envelopment.*—In an envelopment, special attention must be given to the supply of the enveloping force and it may be necessary to attach some quartermaster trucks loaded with class I supplies to this force.

(3) *Attack.*—In the attack, the railhead and other quartermaster installations will probably be located relatively close to the combat area.

(4) *Pursuit.*—Special attention should be paid the encircling force, attaching to the encircling force trucks loaded with class I supplies.

(5) *Defense.*—In the defense, the railhead and quartermaster installations will probably be located well to the rear.

m. Gasoline and oil supply.—(1) The army quartermaster will establish gasoline and oil supply points at all railheads and depots, or at other convenient locations such as civilian gasoline filling stations or mobile filling stations on the main supply routes leading thereto.

(2) Insofar as practicable, an initial distribution of gasoline in containers will be made to each motor vehicle.

(3) Vehicles sent to any army supply point will replenish their supply of gasoline and oil at the army supply point or at a convenient filling station en route to or from the army supply point.

(4) Vehicles remaining in the forward area (such as weapon carriers or prime movers) will be resupplied by exchanging empty containers for full ones brought forward from gasoline and oil supply points by regimental or divisional transportation. Distributing points may be established in

the forward area in order to facilitate the supply of these vehicles. The location and time of operation of the division gasoline and oil distributing points should be included in the division administrative order.

(5) Drivers of vehicles will receipt for gasoline and oil received at filling stations and distributing points.

n. Class II and IV supplies.—(1) *Less animals.*—Supplies belonging to class II and IV, except animals, are secured by the troops through the medium of requisition based upon the needs or estimated requirements of their organization. Unit supply officers submit periodic requisitions to the division quartermaster. These requisitions, when approved by the division commander, are forwarded by the division quartermaster to the army quartermaster. The army quartermaster makes the supplies available to the division in army depots. When there is sufficient motor transportation available in the division, the division quartermaster will draw the supplies from the army depots filling the requisitions. If there is insufficient division transportation available, the division quartermaster may request that the supplies be shipped on the daily train or by army motor transport to the division area. Upon receipt of the supplies, the quartermaster makes distribution to the units. Credits may be set up by a higher unit for subordinate units in various depots and may then be drawn by the division quartermaster or unit supply officer. This eliminates the formality of requisition and expedites delivery of these supplies to the troops.

(2) *Animal replacements.*—Requisitions for animals are submitted in the same manner as for other class II and IV supplies by the division quartermaster. Animals are issued from army remount depots and, if sufficient animals are not available, the requisition is extracted to the communications zone remount depots. The animals are received at the remount depots. They are then either shipped by rail, motor, or marched overland to the division area. When received in the division area, they are delivered to the units in accordance with priorities established by the division commander.

o. *Water.*—(1) Each kitchen carries as a part of normal load a limited supply of water for drinking and cooking. Resupply is effected either locally or by sending empty containers in unit or quartermaster regiment transportation to division supply points. These supply points are established

by the division engineers when approved local supplies are not conveniently accessible to the kitchens.

(2) If 10-gallon containers are used, these are delivered to the unit supply officers in return for empty containers. These empty containers are then returned to the water supply points and refilled. If local resources are insufficient, army engineers will establish water supply points using either tank trucks or railroad tank cars, if necessary.

p. Employment of transport.—(1) *Truck.*—The truck battalions under their respective battalion commanders operate in accordance with orders issued by the division quartermaster and instructions received from time to time from the division motor officer who coordinates their employment. The types of motor vehicles with which the motor companies are equipped are designed for use over unimproved as well as improved roads. The truck companies of a division move supplies, transport troops, and transport such division reserve of class I supplies and small arms and field artillery ammunition as may be prescribed by the division commander and supplement ammunition carrying vehicles of units within the division. These companies also form the nucleus for the division motor pool. The quartermaster supply officer, division motor officer, and unit supply officers collaborate closely in effecting economy of transportation in the distribution of all supplies.

(2) *Light maintenance and car battalion.*—The light maintenance company provides inspection, third echelon maintenance, and repair for all vehicles within the division for which the quartermaster is responsible. This company is capable of operating two separate mobile unit replacement shops. Trained personnel is available in making replacement of unserviceable unit assemblies, minor repairs to automotive equipment, and in the technique of motor transport supply. Equipment which cannot be repaired or replaced promptly should be turned over to the army quartermaster and other equipment issued by the army to replace that which is unserviceable. The car company furnishes passenger transportation for the division commander and the headquarters staff. It also furnishes motorcycle messengers for the division messenger service. Details, if at all possible, should be permanent and the personnel especially trained for messenger service.

q. Bivouacs.—(1) Due to the danger of hostile air attacks, the various activities of the quartermaster regiment are dispersed. With present day communication and transportation, the regimental commander and his staff can perform their duties and make such inspections as necessary without having the division quartermaster office and regimental command post in close proximity to all elements of the regiment. The division quartermaster's office is located in or near the rear echelon of division headquarters. The regimental headquarters is bivouacked in the general vicinity of the division quartermaster's office and the service company is usually bivouacked near the railhead. The truck units are located either near the railhead or the ammunition supply point. If these installations are widely separated, it may be advisable to bivouac one unit near each installation. Truck units are bivouacked so as to conceal their vehicles from air observation. This concealment can be secured by placing the trucks in garages of the cities and towns in which bivouacked or along those streets within a city that have a considerable number of shade trees, or along roads in the country, placing the vehicles under trees supplemented by camouflage. Vehicles also may be bivouacked in or near edges of woods or patches of trees and every effort is made to secure within each group of trucks as great a dispersion as possible. When placing vehicles under trees, every effort is made to conceal the vehicle not only from overhead observation and photography, but oblique aerial observation and photography as well.

(2) Further protection can be had by the proper use of camouflage and vehicles concealed by artificial covering such as nets, branches of trees, and brush. By changing the pattern to resemble other objects compatible with the surroundings, additional concealment can be secured. (See FM 5–20.)

(3) Tracks made through fields and in mud and snow by personnel and vehicles can be easily detected in aerial photographs. Therefore, the movement of personnel and vehicles should be so restricted as not to disclose the presence of camouflaged bivouacs unnecessarily.

(4) The light maintenance company is located between the railhead or ammunition supply point and the combat area. It is preferably located in automotive shops located in towns or cities. The facilities available in these shops, such as

electricity, heavy vises, benches, and other heavy tools, will make possible more efficient use of this unit.

(5) The headquarters garage is located in the general vicinity of the rear echelon of the division headquarters and the car company is bivouacked in this general vicinity.

(6) The headquarters company of the quartermaster regiment is bivouacked in the general vicinity of the division quartermaster's office and regimental headquarters.

r. Graves registration.—(1) Graves registration and mortuary matters are functions of the division quartermaster. The graves registration section of the division quartermaster's office is responsible for recommending the location of cemeteries and the registration of graves therein. Locations for cemeteries are approved and designated by division and higher commanders. The section is responsible for proper sketches showing permanent landmarks and compilation of data necessary to locate the cemeteries. It is also responsible for identification and proper burial and keeps the number of single graves to a minimum. The inspection, collection, and disposition of personal effects of the dead are performed by this section. Documents found on enemy dead will be examined by the proper intelligence officer before disposition. This section is also responsible for general supervision of all attached graves registration units. The primary function of graves registration units is to perform clerical and supervisory work. The labor in connection with burial is performed either by labor troops from the service companies of quartermaster units, civilian or prisoner labor. In combat, a small detachment of the graves registration unit is located at each of the collecting stations and at the division hospitals; that is, at points where the greatest number of dead are to be found. The remainder of the detachment makes a systematic search throughout the battlefield with particular attention to the unit first-aid stations. The transportation necessary for burial is furnished by the motor units of the quartermaster corps.

(2) Cemeteries are located, if possible, near the expected bulk of casualties. If desirable sites are available, they are used to favor the main attack. Cemeteries are located where the soil is well-drained and easy to dig. It is preferable to establish cemeteries in existing local cemeteries or near churches. Where possible, they are concealed from hostile

observation and protected from hostile artillery fire. (See FM 100–10.)

s. Salvage.—Salvage is a function of the division quartermaster. Organizational commanders are responsible for its collection. Salvage should be collected by the units at the front and returned to collecting points or the railhead in unit vehicles. At division collecting points, it is turned over to the division quartermaster who in turn transports it to the railhead where it is turned over to the railhead officer for shipment. If turned over at the railhead by unit vehicles, it is received by the railhead officer. Any salvage that is reparable within the division area is retained by the division quartermaster who makes the necessary provision for its repair. If available and the situation warrants, sections of a salvage company may be attached to the division. Sterilization and bath, and laundry units may also be attached to the division whenever the situation demands. For procedure to be followed in the examination of captured matériel, see FM 30–15.

t. Quartering.—The division quartermaster is responsible for providing sites and quarters for troops and the settlement of all real estate claims. This is done by the administrative section of the quartermaster regiment under the supervision of G–1, except in the matter of construction which G–4 supervises. An officer from the division quartermaster's office accompanies any quartering parties sent out. Where the division is to occupy a site within an established area, quarters, building utilities, etc., are the responsibility of the permanent personnel in the area and they should be advised in advance as to the requirements of the incoming division. (See FM 100–10.)

u. Protection.—The protection of the quartermaster train is a responsibility of the regimental commander. The regiment itself is equipped with rifles and automatic rifles and, if the situation warrants, the regimental commander should supplement these with a request for additional protection. The best protection of the motor trucks is their speed. Additional protection can be furnished by concealment and dispersion and the establishment of road blocks.

v. Ammunition.—Whenever unit trains must be assisted in hauling ammunition, the necessary quartermaster transportation is attached to the units for definite periods. When

a division ammunition dump is to be established, the necessary quartermaster transportation is turned over to the division ordnance officer for this purpose.

w. Traffic and traffic control.—All personnel of the quartermaster regiment must thoroughly understand all regulations and orders for the control of traffic including location of the light line or other restrictions concerning use of lights that may be imposed upon service and other elements of the division. It must be familiar with the direction of traffic on all roads and the operation of traffic control signals and officers' control stations. (See FM 25–10.) Normally on the march, the division quartermaster train marches under division control. Whenever it is necessary to operate the regiment to serve the division, the quartermaster should secure from G–4 authority for the release of as much of the organization as he needs.

x. Plans and orders.—(1) The division commander and his staff collect information and make an estimate of the supply situation. In making this estimate, they consider the effect that changes in the tactical situation will have upon the plan of supply. They consider the effect of weather, the location and character of bridges and defiles, and the effect that their destruction will have upon supply. They study the road net as well as the railroad net and prepare to revise the plan of supply as required. Based upon the estimate of the supply situation, the division quartermaster makes his plans to include—

(*a*) Recommendation of railhead.
(*b*) Location of all quartermaster establishments.
(*c*) Employment of all quartermaster units.
(*d*) Arrangements necessary for supply.
(*e*) Arrangements for motor maintenance.
(*f*) Operations of headquarters' garage.
(*g*) Replacement of animals.
(*h*) Arrangements for quartering troops.
(*i*) Arrangement for salvage.
(*j*) Burial.
(*k*) Bivouacs of kitchen trains of all units of the division.
(*l*) Bivouacs and command posts of all quartermaster units.

(2) As soon as the plan is prepared, fragmentary orders are issued to put the plan into action. For record purposes and to insure proper understanding by the quartermaster regi-

ment, fragmentary orders issued, together with other essential arrangements of the plan, may be repeated in a written field order or in an annex where applicable. (See FM 101–5.)

y. Reports.—The division quartermaster is also responsible for reports. A journal is maintained within the quartermaster regiment which contains all important instructions received or issued, together with the source and name of the person giving them; a résumé of all written and oral messages; and any situation or circulation maps which may have been published. Another required report is a periodic daily report which includes the strength of the regiment, the number of casualties, the number of stragglers, location of the quartermaster units and installations, and a statement covering the supply and evacuation situation and any other quartermaster activities. For staff records, maps, and reports, see FM 101–5.

■ 119. QUARTERMASTER OPERATIONS, INFANTRY DIVISION (TRIANGULAR).—*a. General.*—The division quartermaster for the triangular division functions exactly as the division quartermaster for the square division. The quartermaster battalion for the infantry division (triangular) performs the same duties as the quartermaster regiment of the infantry division (square). The difference that exists between the two lies not in the fundamentals involved but in the methods of their application. The means in the quartermaster battalion are much less than the quartermaster regiment. A greater number of personnel, transportation, and other means are available to the quartermaster of the square division. In general, however, the means available to the quartermaster of the division (triangular) is sufficient except when the division is operating independently. When it is acting independently, additional personnel, transport, and other units may be attached.

b. Organization.—In the quartermaster battalion, there is no provision made for furnishing division headquarters with motorcycle messengers. In all other respects the quartermaster battalion is capable of performing the same missions that the quartermaster regiment performs.

c. *Distribution of class I supplies.*—Because of the limited amount of transportation available to the quartermaster, railhead distribution may be utilized frequently when other factors permit. It should be borne in mind that the quartermas-

ter is responsible for distribution of supplies and that every effort should be made to relieve the combat troops of as much of the problem of supply as possible.

d. Railhead reserve.—Because of the limited transportation and the need for use of this transportation, a railhead reserve may be maintained at the division (triangular) railhead.

e. Transportation. — In the triangular division, an officer from the quartermaster battalion headquarters acts as division motor officer and the officer commanding the maintenance platoon of the headquarters company is the division motor maintenance officer.

SECTION III

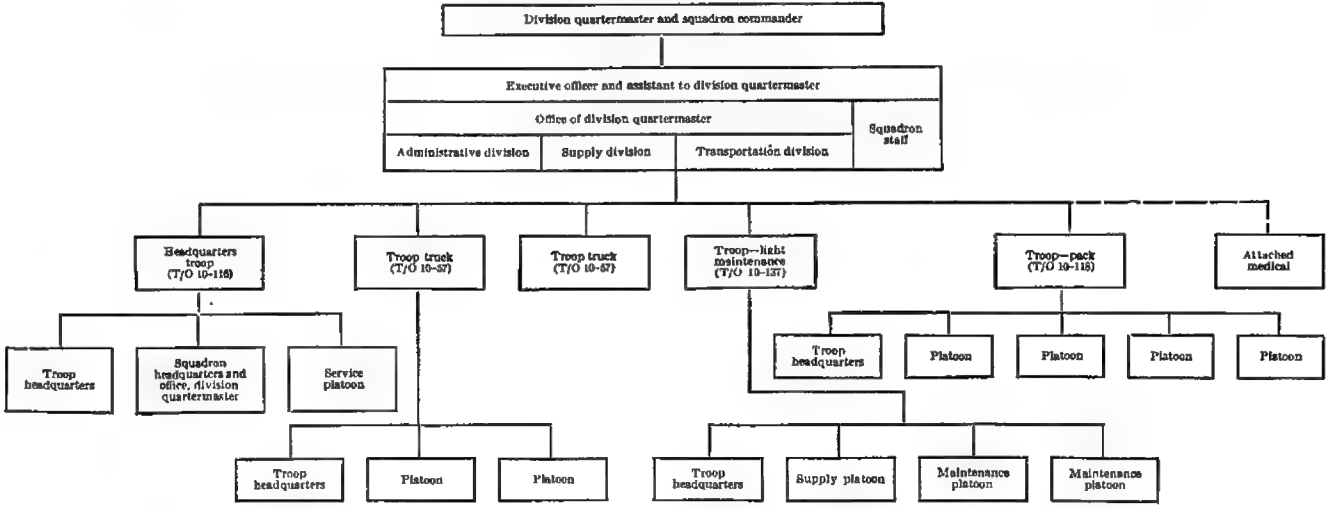
CAVALRY DIVISION (HORSE)

■ 120. GENERAL.—*a.* The quartermaster service in the cavalry division provides the necessary personnel and units, organized into a quartermaster squadron, for quartermaster administration, supply, transportation, motor maintenance, and quartermaster special staff service within the cavalry division. The quartermaster squadron consists of squadron headquarters, headquarters troop, two troops (truck), one troop (pack), one troop light maintenance, and attached medical. (See chart below.)

b. These elements of the quartermaster squadron, except the troop (pack), function in a manner similar to that of corresponding units of the quartermaster battalion, infantry division. The troop (pack) includes four platoons of 50 pack mules each. They are available for cargo purposes but are loaded only when necessary; for example, when combat is imminent or when supplies must be transported over terrain impracticable for motors. Each pack mule is able to carry a maximum pay load of 200 pounds.

■ 121. QUARTERMASTER OPERATIONS.—*a.* The general procedure governing quartermaster operations in the infantry division apply to the cavalry division and should be employed whenever practicable. Modifications, however, frequently are necessary. The wide fronts over which Cavalry may operate, its probable distance from suitable rail facilities, and the difficulty of dispatching and guarding convoys may necessitate intermittent supply at 2- or 3-day intervals, in which case Cavalry subsists on its reserve supplies, if available, or resorts to local procurement. When intermittent supply is

ORGANIZATION OF QUARTERMASTER SQUADRON, CAVALRY DIVISION (HORSE) (T/O 10–115)



necessary, replacement for the interval missed should be automatic unless otherwise recommended by the cavalry division. Often, due to the lack of rail facilities accessible to motor elements of the quartermaster squadron, it will be necessary for the army to forward supplies by motor transport to truck heads which can serve the cavalry division. An alternative method is to attach, to the divisions, trucks from the motor transport service loaded with essential supplies. These trucks may dump their initial loads, the dumps so established becoming supply points for the division or regiments. The motor transport trucks then haul between the army supply points and the dumps. It may be necessary to utilize the air transport service to transport essential supplies to certain units when extreme distance from the base or the presence of hostile troops precludes the use of motor transport.

b. Cavalry frequently may be directed to supply itself with certain items from the resources of the country in which it is operating, either by purchase or requisition. The division quartermaster must exert every effort to accomplish the collection and distribution of such supplies without interfering with or delaying the tactical mission of the combat troops. Before entering a territory in which the command may be required to live off the country, the division quartermaster should obtain all available information concerning its resources. Upon entering the territory, systematic inspections of all parts of the locality should be made to verify previous reports and to gain additional information. Plans and preparations should be made for the collection and distribution of supplies to be purchased or requisitioned. Organizations, except in emergency or when specially authorized to do so, should not be permitted to seize supplies for their own use. When practicable, all supplies should be collected at specific points where they are taken over by the quartermaster and issued to the command in the usual manner. To simplify the exploitation of resources of a territory, full use should be made of local authorities. These authorities ordinarily know the amount of supplies available within their communities and the quantities that can be procured. In friendly territory, local transportation and labor may be hired. In hostile territory, they may be hired or impressed. In either case, local transportation and labor will be more difficult to handle than military and should be employed only when necessary. Their

most frequent use will be in the collection of supplies to convenient points where such supplies can be picked up by organic transport.

c. Gasoline and oil requirements increase the difficulty of completely supplying a cavalry division from local resources, especially in hostile territory. These commodities are easily destroyed. In friendly territory, procurement in sufficient quantities will be dependent upon the locality.

d. An adequate supply of forage is equally as important to cavalry as a full supply of rations. Horses quickly become unserviceable if deprived of adequate forage. There is insufficient transportation in the cavalry division to carry hay in addition to other loads. If hay is not otherwise available, the division quartermaster must be constantly on the lookout for some suitable substitute. Other grasses and nearly all growing crops may help to take the place of hay. Frequently he must also find substitutes for oats, such as corn, barley, wheat, rye, peas, beans, rice, or similar grains. When procuring substitute forage, the quartermaster should consult the veterinarian to assure that the contemplated forage will not be injurious to the animals for which procured.

e. Cavalry often must operate in a theater where the large requirements of water for its men, animals, and motors cannot be obtained locally. When sufficient water is not available in the area in which cavalry is operating, it may have to be brought in by rail, motor transport, or pipe line and distributed to units at water distributing points. At these points, water sometimes is distributed to unit kitchen trucks by exchange of full 10-gallon containers for empties.

f. If local resources in gasoline, oil, forage, and water are not readily available, the amount of transportation to bring up these supplies from the rear is a large factor in determining the quantity of reinforcing transportation that must be made available both to the regiments and to the division as a whole.

g. In rapidly moving situations, there will be little opportunity to procure quartermaster class II, III, and IV supplies and remounts from the rear. In such cases, when the replenishment of these supplies or the replacement of remounts is urgent, the division quartermaster must resort to local procurement. Whenever class I supplies are shipped to the cavalry division through a railhead, it may be practicable

periodically to attach additional cars of other quartermaster supplies, including horseshoes, clothing, saddle equipment, motor parts, and other urgently needed replenishments to the daily train. Ammunition, ordnance, and engineer supplies also may be shipped to the cavalry division railhead when conditions permit and when the cavalry is operating at considerable distances from the army depots.

SECTION IV

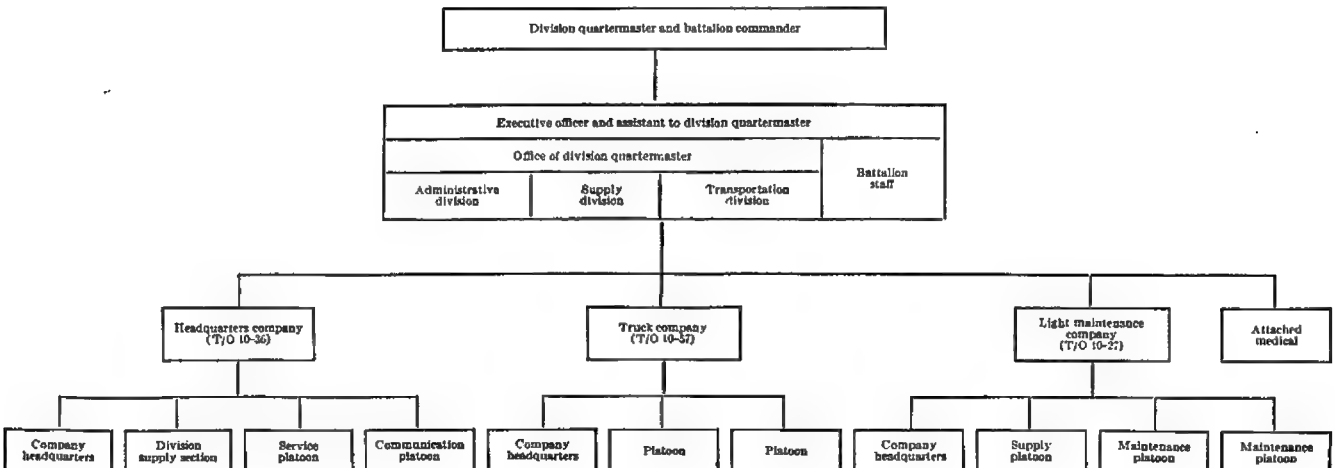
ARMORED DIVISION

■ 122. GENERAL.—Quartermaster Service in the armored division is provided by a quartermaster battalion, armored division (T/O 10–35). This battalion consists of a headquarters, a headquarters company, a truck company, and a company light maintenance. The battalion headquarters furnishes the officer and enlisted personnel for the operation of both battalion headquarters and the office of the division quartermaster. The headquarters company is subdivided into a company headquarters and a service platoon; the company headquarters performs the normal duties of a company headquarters, and the service platoon provides labor for handling supplies and forms the nucleus for the division labor pool. The truck company is equipped with 48 trucks, 2½-ton, and trailers, and is available for general cargo transportation including the transportation of such reserves as may be prescribed by the division commander.

■ 123. OPERATIONS.—Quartermaster operations in the armored division are analogous to those in the cavalry division (horse) with only such modifications as are necessary to meet the needs peculiar to mechanized units. The distances covered by an armored division, the speed of its operations, the consequent wear on quartermaster vehicles aggravating the problems of repair and replacement of parts, and the absolute dependence of mechanized and motorized units on an adequate supply of gasoline and lubricants will develop special difficulties which the quartermaster must be prepared to overcome.

a. The conventional methods of supply will be employed whenever and to such extent as conditions make them practicable. However, as reserves of class I and III supplies carried by the trains of the division will be kept to a minimum, local resources must be exploited to the utmost. Foresight,

ORGANIZATION OF QUARTERMASTER BATTALION, ARMORED DIVISION (T/O 10-35)



flexible plans, and timely preparations will enable an alert division quartermaster to adopt expedients to meet other contingencies.

b. Supply of armored units is based on the rule that the regiment or similar unit transports class I supplies necessary for 3 days' operation. In addition to these supplies carried in the units, class I supplies for 1 day's operation are carried by the quartermaster battalion for all units of the division, leaving a surplus of free cargo space in the battalion available to transport either a part of a day's supply of ammunition, all classes, or a part of a day's supply of gasoline and oil. When elements of the division are detached on independent missions, sufficient transportation should be attached to such elements to insure continuity of supplies for the execution of the mission. The limitations to the distance of operation of supply are based on the following considerations:

(1) The cargo capacity of company and regimental vehicles.

(2) The mobility of supply trains or similar attached vehicles which is governed by the capabilities of vehicles and personnel. These capabilities cannot be exceeded with impunity for any considerable period of time.

(3) The location of railheads, truck heads, or other establishments where replenishment of supplies is received. These establishments should be located so that trains in maintaining the continuous flow of supplies will not be required to exceed a normal marching distance each day. At times, this may necessitate a daily forward displacement of such establishments equal to the daily advance of the combat elements of the division.

SECTION V

THE CORPS

■ 124. GENERAL.—*a.* The corps, being primarily a tactical unit, has but few administrative responsibilities. It is responsible for the allocation to divisions, as well as corps troops, of such supplies and credits as may be allocated to it by higher authority.

b. The corps quartermaster service under the corps quartermaster consists of the office of corps quartermaster; two quartermaster companies, truck (T/O 10–57); one quartermaster company, light maintenance (T/O 10–27); one quartermaster company, gasoline supply (T/O 10–77);

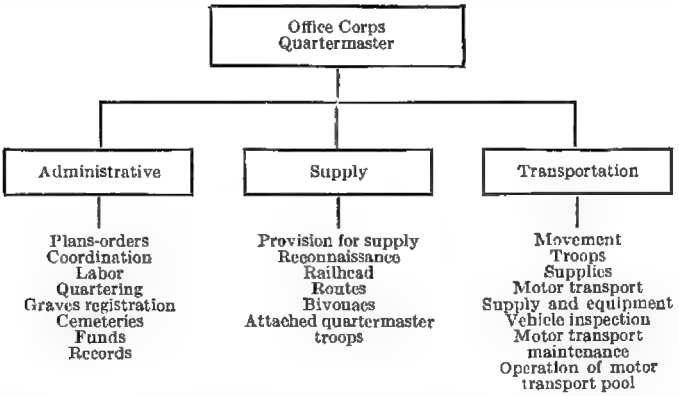
and one quartermaster company, service (T/O 10–67). It is designed primarily to meet two requirements:

(1) The quartermaster service of the corps troops.

(2) The special staff functions of the corps quartermaster.

c. When a corps is operating independently and is charged with primary responsibility for its own supply and evacuation, it will be necessary to attach to it additional service troops in order to operate establishments similar to those prescribed for the army. These attachments normally will be one company, service; two companies, truck; two companies, light maintenance; one company, gasoline supply; and one company, car.

■ 125. SPECIAL FUNCTIONS.—*a.* The office of the corps quartermaster is the headquarters of the corps quartermaster service and is located at or near the rear echelon of corps headquarters. This office supervises and directs all quartermaster activities pertaining to the corps. It is divided into three operating divisions, administrative, supply, and transportation, as shown in the chart below.

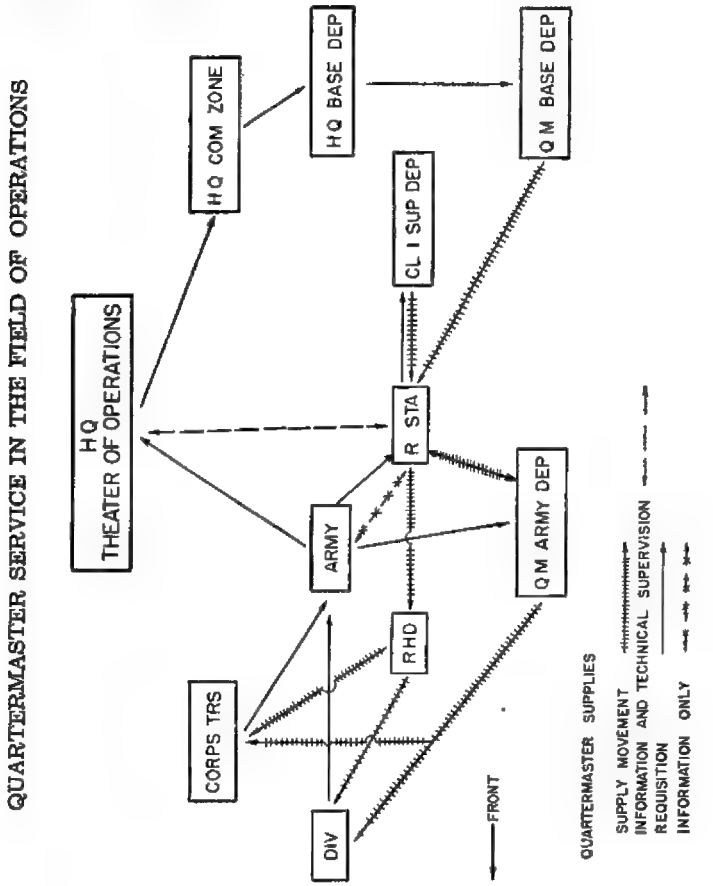


b. When the corps is part of an army, the corps quartermaster operates the following establishments: corps motor parks; corps dumps; motor repair shops; distributing points for corps troops.

■ 126. SUPPLY.—*a.* The corps is responsible for the service of corps troops only. It is also responsible for the allocation to the divisions and corps troops of such supplies as may be

allotted to it by the army in the form of credits.

b. The corps is concerned with the supply of its divisions only to the extent of assurance that the supply is satisfactory. The normal chain of supply, except for allocations of ammunition and at times other classes of supplies which are subject to allotment by corps to divisions, is direct between army and the divisions. Animal replacements are supplied to divisions either through the corps or directly from the army remount depot. (See charts below.) (See also FM 100–10.)



■ 127. TRANSPORTATION.—*a.* The motor transport service, army corps, (excluding quartermaster section, corps headquarters) consists of two quartermaster companies, truck, T/O 10–57; one quartermaster company, light maintenance, T/O 10–27; and one quartermaster company, gasoline supply, T/O 10–77.

b. The independent corps, responsible for its own supply and functioning as a small army, requires the greatest flexibility in the utilization of motor transportation. In open warfare, motor transportation may be used extensively in the maneuvering of divisions.

■ 128. COMPARISON OF CORPS OF AN ARMY AND INDEPENDENT CORPS.—The difference in function and operation of the corps quartermaster service when the corps is part of a field army and when serving as an independent corps is illustrated in the charts (pages 126 and 127).

■ 129. MISCELLANEOUS (QUARTERMASTER SERVICE).—*a.* Miscellaneous services include mobile and portable establishments set up by attached units such as laundry companies, sterilization and bath companies, salvage collecting companies, and mobile shoe repair companies. Field salvage is a function of the supply division performed under the supervision of an officer of the quartermaster service detailed as salvage officer.

b. Quartering of troops is a function of the corps quartering officer under the corps quartermaster.

c. The corps quartermaster is also concerned with the movement of all troops by rail.

SECTION VI

THE ARMY

■ 130. FUNCTIONS.—The Quartermaster Corps in a field army is charged in general with providing quartermaster service to the command as follows:

a. Procurement and issue of all quartermaster supplies.

b. Transportation of troops and supplies.

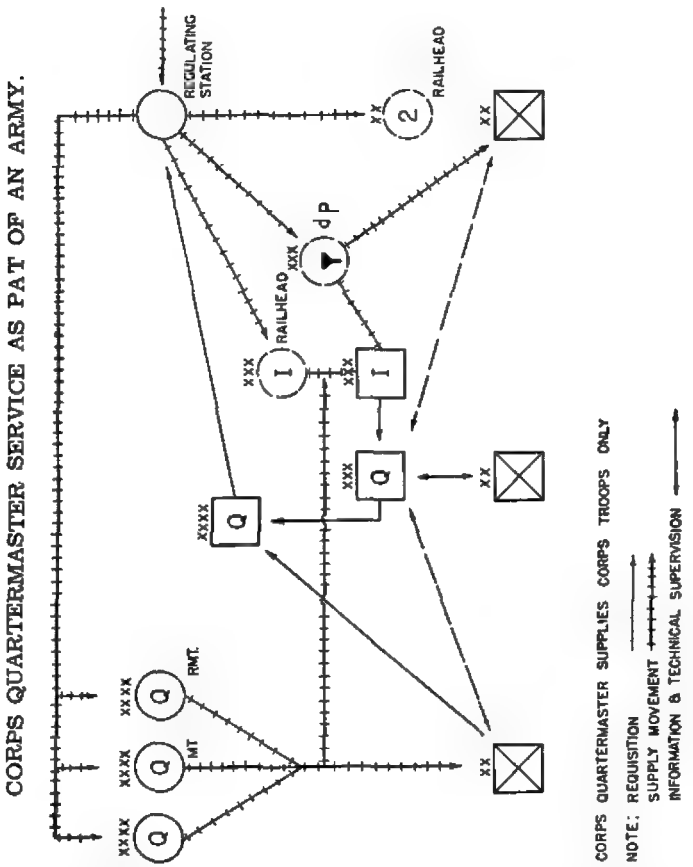
c. Operating labor service and motor pools.

d. Operating such quartermaster utilities as are assigned to the army.

■ 131. ARMY QUARTERMASTER.—The official designation of the

officer responsible for quartermaster service is the army quartermaster and his duties in general are—

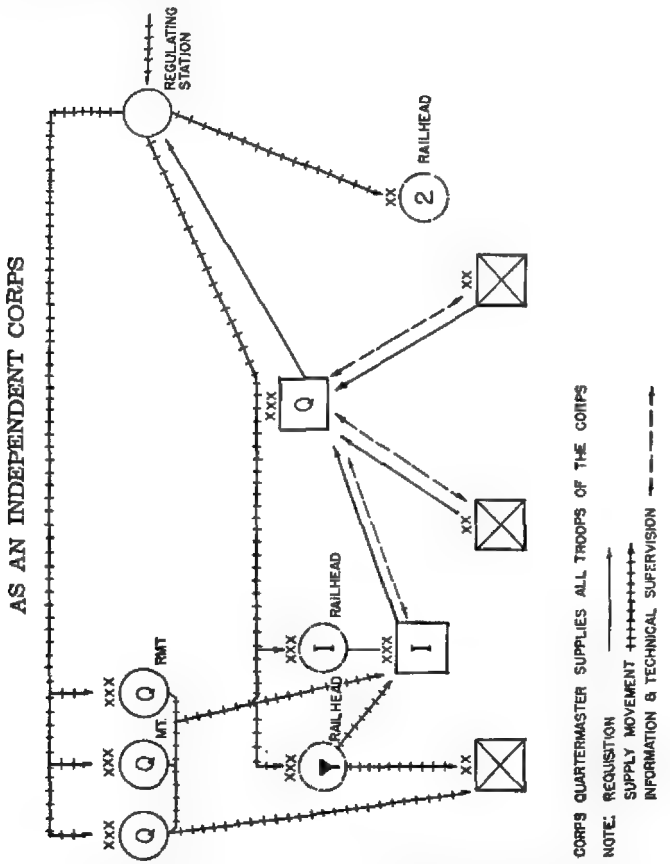
a. Staff.—(1) Adviser to the commander and staff on matters concerning quartermaster activities.



(2) Planning, including estimates of requirements in supplies, equipment, and personnel; recommendation with reference to locations of railheads; locations of quartermaster establishments; employment of quartermaster units, supply arrangements; motor maintenance; garage operations; ani-

mal replacements; burials and bivouacs; exploiting local resources for supplies, transportation, storage, and labor.

(3) Technical supervision and inspection, within the limits prescribed by his commander, of quartermaster activities in subordinate units.



(4) Examination of captured quartermaster equipment.

b. Command.—(1) Command of the quartermaster service of the field army.

(2) The efficient operation of his service in accordance with policies, plans and basic decisions of the army commander.

■ 132. ORGANIZATION.—The quartermaster service, field army (excluding quartermaster section, army headquarters) consists of one quartermaster regiment, truck (T/O 10–51); one quartermaster battalion, gasoline supply (T/O 10–75); three quartermaster battalions, light maintenance (T/O 10–25); one quartermaster company, depot (supply) (T/O 10–227); one quartermaster company, car (T/O 10–87); six quartermaster battalions, service (T/O 10–65); one quartermaster company, depot (motor transport) (T/O 10–48); and one quartermaster battalion, sterilization and bath (T/O 10–175).

■ 133. ESTABLISHMENTS.—*a.* The army service area covers that territory between the rear boundaries of the corps and the rear boundary of the combat zone. Army quartermaster establishments and army quartermaster service troops are usually located in this area. The army in the combat zone is the basic supply unit. It is responsible for the timely supply of its component divisions, corps, and army troops. The corps, as a rule, has few supply responsibilities except for corps troops. The normal chain of quartermaster supply is direct between the army and the divisions. The army quartermaster assures flexibility of supply by maintenance of reserve stocks in quartermaster depots under his direct control. Army quartermaster depots are located on or convenient to a railroad connecting with the communications zone where railroad siding facilities are adequate for handling the supplies. The army quartermaster depot should be located beyond effective range of known enemy artillery, within practicable hauling distance of the trains of units to be supplied and have a good all-weather road net connecting units to be served. The location of the army quartermaster depot is so selected and planned as to avoid frequent moves. Ordinarily it is not located in the vicinity of an ammunition depot. Depending on the military situation, the army may have quartermaster supply depots, field remount depots, motor transport repair shops, sterilization and bath establishments, salvage plants, laundries, bakeries, and sales commissaries. The army quartermaster maintains in his depots only such stocks as the military situation demands be kept nearer the front than the depots of the communications

zone. Decision as to the kinds and quantities of supplies to be maintained is a responsibility of command. Accumulations of excessive amounts of supplies in the combat zone should be avoided.

b. The army establishes gasoline and oil filling stations at supply points and on all main supply roads. These filling stations are operated by gasoline supply companies and battalions attached from the motor transport service. Expenditures are reported to army in the daily telegram and are then checked against the report of issues from the various stations as a basis for the amount to be requisitioned. A battle reserve of not less than one complete refill for all vehicles should be maintained in the area and as much more as the plans for future operations may indicate as necessary.

■ 134. CAMOUFLAGE.—In general, camouflage work is executed by the troops of the activity or area being camouflaged. Major camouflage projects are executed by general engineer troops. (See FM 5–20.)

a. Use.—(1) Natural cover should be supplemented by camouflage, which when successful, not only conceals the camouflaged objects but also disguises the fact that camouflage has been used. Insofar as practicable, the enemy must be kept in ignorance of any change in conditions and work must be conducted so that it will not register in aerial photographs or be detected by enemy ground observers. Photographs frequently disclose things not visible to an observer's unaided eye. Organization commanders should, therefore, familiarize themselves with the basic considerations in camouflage; prevent the making of trails, tracks, or other betraying marks in the vicinity of any work; and instruct their personnel in the use of natural and artificial cover.

(2) Natural cover, or camouflage prepared from natural material, is usually more effective and economical than cover prepared from artificial material. Full advantage should always be taken of such cover. When natural materials are used for camouflage, care should be taken to see that the wilting process does not destroy their effectiveness.

(3) In general, it is useless to attempt to camouflage a position where work has already begun and where the enemy has had an opportunity to observe and register the site.

(4) Even though it may be impossible to camouflage completely a military work or structure, its visibility should be

reduced by disguising its outline and eliminating highlights and reflecting surfaces.

(5) Subsidiary military works or auxiliary structures, such as temporary kitchens or latrines, must be located and camouflaged carefully.

(6) There should be close cooperation among the intelligence sections, Air Corps, and camouflage officers in order that camouflage work may be properly executed. Whenever practicable, the counterintelligence plan should provide for aerial photographs of our own positions to insure the proper surveillance of the camouflage effort. Camouflage officers should study these photographs with a view to correcting defective work.

(7) In order that they may perform their camouflage duties properly, responsible officers must acquire an intimate knowledge of the area in which they are to operate. They must learn the photographic values, textures, and character of the materials required, as well as the best means of adapting their work to the terrain. For detailed instructions concerning the use of camouflage, see EFM 5–15 and EFM 5–20.

b. Discipline.—The proper concealment of troops from hostile aviation depends in large measure on the understanding by all military personnel of what aerial photographs reveal and by the degree of camouflage discipline prevailing within the command. Trained troops utilize to the maximum existing roads, trails, and paths before making new ones, and avoid making any that are unnecessary.

c. Equipment.—(1) Individual and organizational equipment should be of neutral color material or should be treated with a neutral color flat paint. Metal parts should have a dull nonreflecting finish.

(2) All identification marks, such as divisional, regimental, or lower organizational designations or insignia on all classes of individual or organizational equipment, should be effectively obliterated prior to entry into the combat zone.

d. Cover.—Troops should make maximum use of the concealment afforded by terrain features such as woods, covered routes, and villages. Whenever possible, this should be supplemented by artificial concealment prepared from various materials, such as grass, leaves, or burlap. For detailed instructions concerning individual use of concealment, see FM 21–45 (now printed as ch. 9, BFM, vol. I).

e. Darkness.—(1) *Night marches.*—In general, troop movements in the combat zone should be made under cover of darkness and with restrictions on the use of lights. The different degrees of restrictions on the use of lights will be defined in orders by the army or theater commander. When troops are being concentrated by night marches, daybreak should find them either in position or under cover in woods or villages.

(2) *Blackout.*—If the enemy possesses a powerful air force, a blackout system must be employed in the theater of operations, the necessary instructions for which will be issued by the theater commander.

SECTION VII

THE AIR FORCE

■ 135. GENERAL.—The general procedures of quartermaster service for ground forces apply equally for air forces but details of execution vary because of the high mobility of the air force, the rapidity of its concentration, and the wide dispersion of its squadrons. For the ground forces, the service of supply builds up behind the combat troops. For the air force, it must be completely established and in operation before the arrival of the combat squadrons.

■ 136. MISSION.—The mission of the Quartermaster Corps in the area or areas occupied by the air force is to furnish the necessary personnel and facilities for the proper quartermaster supply and maintenance of all troops of the air force in the field and the furnishing of Quartermaster Corps supplies and equipment adequate in quantity and quality at the places and times needed. For proper control of operation, the quartermaster service of each air base established in the theater of operations is organized on an area basis under the command of the air base commander concerned and is operated by the air base quartermaster.

■ 137. DUTIES IN AIR BASE AREA.—*a.* The following general duties are performed by the quartermaster service in each air base area:

(1) Establishment, operation, and maintenance of all quartermaster facilities as required by the air base commander,

(2) Procurement, storage, and issue of all classes of quartermaster supplies. Quantities to be procured and the levels to be maintained are determined by the air force commander. Places of issue or distributing points are determined by the air base commander.

(3) Collection and disposal of salvage.

(4) Procurement, installation, operation, and maintenance of all fire prevention and fire fighting equipment.

(5) Procurement, maintenance, and operation of all means of transportation for the general movement of troops and supplies other than by air.

b. Distributing points are established by the air base commander for requisition and issue of all classes of supplies to air force troops. One distributing point is normally established per auxiliary airdrome within the air base area. One squadron is normally assigned to an airdrome. The distributing point is operated by a representative of the air base commander with a detail of service troops from the air base. Quartermaster personnel consisting of two or three enlisted men from the mobile field section of the air base service unit are assigned to this detail. Supplies are drawn from the distributing point by the squadron concerned.

c. The distribution of all classes of quartermaster supplies is made from the air base depot whenever convenient. In situations where quartermaster distributing agencies, other than those under air force command, and commercial distributing agencies are conveniently located for supply, the air force commander arranges with the responsible parties concerned for distribution and issue through these agencies. The detailed arrangements are consummated by the air base quartermaster.

d. Quartermaster class I supplies are issued on a daily automatic basis. Appropriate reserves are stocked at each distributing point for troops served thereat.

e. Other classes of quartermaster supplies are procured by the air base commander by requisition, either formal or informal, on War Department or communications zone depots. The air base quartermaster arranges for distribution of these supplies to troops from stocks in the air base depot, withdrawals against credits, or by requisition on depots not under air force command. In the case of class IV supplies, the requisition must receive the final approval of the air force com-

mander. No stocks of these supplies are placed at distributing points.

SECTION VIII

GHQ

■ 138. FUNCTIONS.—The quartermaster corps service with GHQ exercises general technical direction and control over the administrative, supply, and transportation divisions of the Quartermaster Corps within the command and in general is charged with—

a. Procurement, storage, and issue of all quartermaster supplies.

b. Issue of remounts.

c. Transportation of troops and supplies, except such as may be allocated to another service; and with the operation of motor transport establishments, the Army transport service, docks, and the stevedore service.

d. Operation of a labor service and motor pools.

e. Operation of quartermaster service, including bakeries, cold storage and ice plants; gardens; laundries; baths; salvage plants; motor repair establishments; fire protection stations; baggage collection depots; cemeteries; and paint, blacksmith, carpenter, plumbing, and shoe repair shops.

f. Operation of graves registration service.

g. Procurement and disposition of real estate and facilities, including the provision of quartering space and shelter.

■ 139. GHQ QUARTERMASTER.—The official designation of the officer responsible for quartermaster service is GHQ quartermaster, and his duties in general are outlined in FM 101–5.

■ 140. ORGANIZATION.—The type, strength, and organization of quartermaster units and personnel will be as prescribed by the War Department and published in orders or Tables of Organization.

■ 141. ESTABLISHMENTS.—The quartermaster service maintains docks, motor transport depots, personnel replacement depots, and supply depots for quartermaster class I, II, III, and IV supplies. The class I supply depots are organized and stocked to provide automatic supply. Quartermaster depots with balanced stocks of class II, III, and IV supplies are established to meet either immediate or future requirements

of the troops. Supplies are usually made available in the form of credits in designated depots. When credits are established for an army in the communications zone depots, calls are made as necessary by the army supply service concerned, direct to the proper depot or through the corresponding supply officer at the regulating station. If a call is sent direct to the communications zone depot, a copy is sent to the regulating officer. Shipments are made up and dispatched either through the regulating station or direct to the requisitioning agency. In the latter case, the regulating officer is notified of the shipment.

SECTION IX

MOTOR TRANSPORT SERVICE

■ 142. GENERAL.—Motor transport is the normal means of bridging the gap between the troops at the front and the heads of rail or water transportation. It is also used extensively in troop movements, in the interior administration of depots and other establishments, and in the movement of less than carload lots of supplies between depots and other establishments. It supplements and in emergency may entirely replace rail or inland waterway transportation. To effect economy in the use and maintenance of the motor transport required in a theater of operations, all motor transport not assigned organically to troop units is pooled in the motor transport service.

■ 143. ORGANIZATION AND CONTROL.—*a.* The motor transport service is an operating unit in charge of the chief of service who functions under the direction of the quartermaster, theater of operations, in accordance with the policies of the commander. It includes a headquarters, and passenger, cargo, maintenance, and depot units in varying sizes (regiments, battalions, companies) in accordance with requirements. It is responsible for the procurement, storage, issue, and heavy maintenance, including salvage, of all Quartermaster Corps motor transportation assigned to a theater of operations and of the necessary supplies and replacement assemblies therefor.

b. Units of the motor transport service are attached to armies, in accordance with their requirements, at the direction of the theater commander. Likewise units of the motor transport service are attached to ports, depots, hospitals, and

other establishments in the communications zone in accordance with their needs, as directed by the commander of the communications zone. The commanders of the units to which they are attached are responsible for the operation of these motor transport units under such general technical supervision by the chief of the motor transport service as may be prescribed by the theater commander.

c. The chief, motor transport service, is in direct command of all motor transport units not attached to armies or to communications zone establishments, except such establishments as pertain to his own service.

d. In case the theater commander desires to be able to establish promptly a pool of motor transportation for an operation, he will require a specified tonnage to be available in certain areas on call. In extremely urgent situations, he may require the physical pooling of such transportation at designated places.

e. The operation of motor transport for the movement of troops and supplies to and evacuation from the combat zone is directed by the chief of the motor transport service subject to control of traffic by the regulating officer similar to the control that officer exercised over rail transportation. A representative of the motor transport service is on the staff of the regulating officer. This representative keeps the regulating officer informed as to the availability of motor transport and as to traffic conditions, arranges for shipments by motor transport as desired by the regulating officer, and coordinates such movements with the traffic control agencies of the communications zone and the army.

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